

**Travis Air Force Base
Environmental Restoration Program
Restoration Program Manager's
Meeting Minutes
19 July 2017, 0930 Hours**

Mr. Lonnie Duke of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Section (ISS) conducted the Restoration Program Manager's (RPM) teleconference meeting on 19 July 2017 at 0930 hours in Building 248 at Travis AFB, California. Attendees included:

Lonnie Duke	AFCEC/CZOW
Glenn Anderson	AFCEC/CZOW
Angel Santiago Jr.	AFCEC/CZOW
Merrie Schilter-Lowe	Travis AFB/PAO
Monika O'Sullivan	AFCEC/CZOW
William Hall	AFCEC/CZR
(via telephone)	
Dezso Linbrunner	USACE-Omaha
(via telephone)	
Adriana Constantinescu	RWQCB
(via telephone)	
Ben Fries	DTSC
(via telephone)	
Nadia Hollan Burke	USEPA
(via telephone)	
Indira Balkissoon	Techlaw, Inc.
(via telephone)	
Jeff Gamlin	CH2M
(via telephone)	
Levi Pratt	CH2M
(via telephone)	
Mike Wray	CH2M
Jill Dunphy	CH2M

Handouts distributed prior to or at the meeting, discussions, and presentations included:

Attachment 1	Meeting Agenda
Attachment 2	Master Meeting and Document Schedule
Attachment 3	SBBGWTP Monthly Data Sheet (June 2017)
Attachment 4	CGWTP Monthly Data Sheet (June 2017)

Attachment 5	LF007C GWTP Monthly Data Sheet (June 2017)
Attachment 6	ST018 Monthly Data Sheet (June 2017)
Attachment 7	Presentation: 2016 Travis AFB CAMU IM&M Summary
Attachment 8	Presentation: TRIAD Presentation
Attachment 9	Program Update (July 2017)

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 21 June 2017 RPM meeting minutes were approved and finalized as written, with the following exceptions:

— Ms. Burke requested the following changes:

Master Meeting and Document Schedule discussion, Community Relations Plan: the last two sentences should be deleted and replaced with a statement indicating “The EPA expressed concern for the schedule and timing of the CRP document and website updates.” The sentence regarding the preference for the title should be revised to say “The EPA stated that their preference is to use the word ‘Involvement’ in the title rather than ‘Relations’, per their guidance document, the EPA Community Involvement Handbook.” Ms. Burke also requested that a note be added that the team decided to discuss this offline, but this is already reflected in the minutes.

Master Meeting and Document Schedule discussion, Annual Land Use Control Report: Delete the last sentence because this issue was resolved.

B. Action Item Review.

Action items from July 2017 were reviewed.

Action item 1 is ongoing: Ms. O’Sullivan to provide updates on perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). 19 July 2017: Ms. O’Sullivan said that they submitted responses to comments on the Travis AFB site-specific QAPP for review. They are anticipating receiving their Biological Opinion within the week, and once required clearances are approved, they may be conducting field work as early as August, and definitely before the end of the construction season. The waste water treatment plant was not involved in the use of aqueous film-forming foam; therefore, it is outside of the scope of this investigation.

C. Master Meeting and Document Schedule Review (see Attachment 2)

The Travis AFB Master Meeting and Document Schedule (MMDS) was discussed during this meeting (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

The next RPM meeting will be held on Wednesday, 16 August 2017, at 0930 hours.

Travis AFB Master Document Schedule

- Community Relations Plan (CRP): No change was made to the schedule. Mr. Anderson will be meeting with Ms. Merrie Schilter-Lowe and Ms. Jill Dunphy later in the day; once the document is revised, AFCEC PAO approval will be necessary prior to regulatory review. A schedule will be determined at that time.
- Work Plan for the Fourth Five-year Review: No change was made to the schedule. The Work Plan is anticipated to be submitted to the regulators for review in 2017, with the actual Five-Year Review following in 2018. Nadia requested an update if this will not be submitted in Fiscal Year 2017 so that she can move it to FY 2018 if needed. Mr. Duke responded that he anticipates submittal in FY 2017. Mr. Wray clarified that this is not a CH2M document.
- Amendment to the Soil ROD for the WABOU Sites DP039, SD043, and SS046: This was added to the schedule; all dates are “To Be Determined” at this time.
- Potrero Hills Annex (FS, PP, and ROD): No change was made to the schedule. Ms. Constantinescu had no additional information to report. Mr. Anderson stated that further information regarding the schedule should be available at the August RPM meeting.
- Data Gap Investigation Results Technical Memorandum for Soil Sites SD033, SD043, and SS046: The Predraft to AF/Service Center date was changed to 26 July 2017. The rest of the dates were changed accordingly.
- Site SS016 Data Gap Investigation Technical Memorandum: No change was made to the schedule.
- Site FT004 POCO Soil Data Gap Investigation Work Plan: The Response to Comment and Final document due dates were changed to 3 August 2017. Ms. Constantinescu is reviewing RTCs and hopes to have comments ready by 27 July 2017.
- Quarterly Newsletters (July 2017): The Draft submittal date was changed to 11 July 2017; the rest of the dates were changed accordingly.

- 2016 Annual GRISR: The due date for agency comments was extended until 10 August 2017 based on a request for 30-day extension by DTSC; the rest of the dates were changed accordingly.
- 2016 Annual CAMU Monitoring Report: No change was made to the schedule.
- Site SD034 Technology Demonstration Construction Completion Report: The Response to Comment meeting date was changed to 19 July 2017; the rest of the dates were changed accordingly.
- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW051, OW053, and OW054: No change was made to the schedule.
- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW052, OW050, OW052, OW055, OW056, and OW057. No change was made to the schedule; however, the title was updated to include two additional OWSs in the document (OW050 and OW056).
- Site ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum: No change was made to the schedule.
- Site LF044 Investigation Work Plan: No change was made to the schedule, and the document was moved to the History page.
- Site SS014 Subsite 1 POCO Technology Demonstration Construction Completion Report: No change was made to the schedule, and the document was moved to the History page.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, June 2017 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 42.7% uptime, and 1.8 million gallons of groundwater were extracted and treated during the month of June 2017. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 102.2 gallons per minute (gpm). Electrical power usage was 5,105 kWh, and approximately 4,578 pounds of CO₂ were created (based on DOE calculation). Approximately 0.54 pounds of volatile organic compounds (VOCs) was removed in June. The total mass of VOCs removed since startup of the system is 487.5 pounds.

Optimization Activities for SBBGWTP: No optimization activities are reported for the month of June 2017.

Note: Aquifer testing is being conducted at sites SS030 and FT005 to determine if optimization of the pump and treat system through installation of an additional extraction well(s) will help to achieve closure at this site. If the decision is made to install an additional extraction well(s), the timing of installation will be determined, and documentation of the optimization will be included in the next GRISR.

Central Groundwater Treatment Plant, June 2017 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 54.9% uptime with approximately 808,390 gallons of groundwater extracted and treated during the month of June 2017. All treated water was discharged to the storm sewer system. The average flow rate for the CGWTP was 35.5 gpm. Electrical power usage was 1,384 kWh for all equipment connected to the Central Plant, and approximately 1,912 pounds of CO₂ were generated. Approximately 1.55 pounds of VOCs were removed from groundwater by the treatment plant in June. The total mass of VOCs removed since the startup of the system is 11,465 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of June 2017.

Note: The Site DP039 bioreactor is currently undergoing an optimization effort to determine the most effective pulse mode duration to optimize distribution of TOC in the subsurface. The infiltration manifold will be replaced due to accumulation of silt that has occurred over the 10 years it has been operating.

Mr. Anderson noted that the 10-year duration for operation of the first bioreactor in the country is newsworthy, and he'd like to write an article about it, as well as the 20-year anniversary of the phytoremediation pilot test, in a future Guardian newsletter.

LF007C Groundwater Treatment Plant, June 2017 (See Attachment 5)

The Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) performed at 94.1% uptime with approximately 241,940 gallons of groundwater extracted and treated during the month of June 2017. All treated water was discharged to the Duck Pond. The average flow rate for the CGWTP was 5.1 gpm. The plant operates on solar power only. Approximately 1.01×10^{-3} pounds of VOCs were removed from groundwater by the treatment plant in June. The total mass of VOCs removed since the startup of the system is 174.37 pounds.

Optimization Activities for LF007C GWTP: No optimization activities are reported for the month of June 2017.

ST018 Groundwater (MTBE) Treatment Plant, June 2017 (see Attachment 6)

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 93.1% uptime with approximately 268,430 gallons of groundwater extracted and treated during the month of June 2017. All treated water was discharged to the sanitary sewer system. The average flow rate for the ST018 GWTP was 6.9 gpm. Electrical power usage for the month was 157 kWh for all equipment connected to the ST018 GWTP. The total CO₂ equivalent, including an estimate for the carbon change-out, equates to approximately 116 pounds. Approximately 0.04 pound of BTEX, MTBE and TPH was removed in June by the treatment plant, and approximately 0.04 pound of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 41.7 pounds, and the total MTBE mass removed since startup of the system is 10.2 pounds.

Note: Electrical power use at the ST018 GWTP is only for the alarm system and a pump that pushes water through the GAC vessels for treatment. The four groundwater extraction pumps in the system are all solar powered.

Optimization Activities for ST018 GWTP: No optimization activities to report for the month of June 2017.

3. Presentations:

A) 2016 Travis AFB Corrective Action Management Unit (CAMU) Inspection, Monitoring, and Maintenance (IM&M) Summary (See Attachment 7)

Mr. Wray reported on the 2016 CAMU IM&M Activities. Mr. Pratt was on the phone to answer questions. See Attachment 8 for details. Mr. Wray noted that this presentation is meant to assist regulatory agencies' review of the document. Highlights include:

A 5-foot-thick soil cap was installed over Landfill 2, which is the subgrade of the CAMU. The CAMU consists of consolidated contaminated soil excavated from 7 soil sites, which was capped with an evapotranspiration (ET) cover. This CAMU is in the postclosure care period.

IM&M activities are conducted in accordance with the Post-Construction Maintenance Plan (PCMP) and include landfill gas monitoring, settlement monitoring, CAMU subgrade and ET cover inspections, and site security inspections. Groundwater monitoring at the CAMU is conducted as a component of the Travis AFB Groundwater Remediation Implementation Program (GRIP).

Settlement monitoring is now a 5-year isosettlement survey with only visual inspections being performed monthly. The baseline survey was conducted in 2015; the next topographic survey is scheduled for 2020, at which time the results will be compared to the 2015 baseline map to perform isosettlement analysis of the CAMU ET cover. There was no visual evidence of differential settling observed on either the CAMU subgrade or ET cover in 2016.

The site is very secure; locked chain link fences surround the site.

Landfill gas monitoring at the perimeter wells is currently conducted quarterly. No evidence of landfill gas migration was observed in 2016.

The CAMU subgrade and ET cover are intact and continue to function as designed.

Methane concentrations have been well below the five percent compliance limit. A letter requesting a reduction in land fill gas monitoring from quarterly to annually starting in 2018 will be submitted to the regulatory agencies in the third quarter of 2017. If approved, landfill gas monitoring would occur during the time of year when methane production is expected to be highest (at the conclusion of the rainy season, typically in March).

Ms. Burke asked if the landfill gas sampling would change. Mr. Pratt responded that it would; the PCMP requires quarterly monitoring for the first two years, after which the frequency is dictated by the results. Ms. Burke requested that this language be included in the letter, when written.

Ms. Burke also asked if the ultimate goal of the letter is to reduce the monitoring program to fewer than 30 years. Mr. Wray and Ms. Constantinescu both responded that it is not; that is triggered via Title 27. Mr. Anderson noted that the CAMU regulations were grandfathered in the WABOU Soil ROD.

B) TRIAD Presentation (See Attachment 8)

Mr. Wray presented an overview of the SD031 Remedial Investigation, as well as the status of construction, injections, and drilling. See Attachment 9 for details. He noted that this presentation is mostly a data dump to keep the agencies updated on the investigation findings. Highlights include:

Thallium and hexavalent chromium were unexpectedly detected in soil samples collected during SD031 RI activities.

Initial thallium analysis was via EPA Method SW6010, and detected at concentrations up to 9.9 mg/kg. Interference with high levels of iron and aluminum was suspected. Three samples were reanalyzed and additional samples were collected from areas where high Thallium results were observed. Samples were analyzed using EPA Method 6020. The resulting thallium detections ranged from 0.087 mg/kg to 0.17 mg/kg; all well below the environmental screening level of 0.78 mg/kg.

Initial hexavalent chromium analysis was via EPA Method SW7196A, and detected at concentrations up to 1.5 mg/kg. Interference was suspected because there's no known source and hexavalent chromium salts are not stable in soil. New samples were collected from areas where high hexavalent chromium results were observed, and analyzed using Method BAL4300. The

resulting hexavalent chromium results ranged from 0.019 J mg/kg to 0.507 mg/kg. All but two of 18 results were below the environmental screening level of 0.3 mg/kg.

Ms. Burke asked if groundwater samples had been analyzed for hexavalent chromium. Mr. Wray took the action item to find out and report any results; reporting later in the day that two wells in the heart of the plume were sampled and analyzed for total and filtered hexavalent chromium; all four samples were non-detect.

Compounds in soil detected that exceed environmental and/or regional screening levels at Site SD031 include: dioxins and furans, TPH-G, TPH-D, acetone, benzene, ethylbenzene, TCE, total xylenes, naphthalene, 2-methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 1-methylnaphthalene, and phenol.

Compounds in soil vapor exceeding the EPA Vapor Intrusion Screening Levels at Site SD031 include: benzene, ethylbenzene, vinyl chloride, naphthalene, and total xylenes.

Field work at the OWSs includes a soil investigation at the former location of OW050, as well as removal of OW055 and OW056. OW050 was removed and backfilled with pea gravel in 2009; this OWS will be closed, but the surrounding contamination will be investigated as a new project.

Ms. Constantinescu asked how far away from the backfill the samples were collected at former OW050; Mr. Wray responded that they were approximately 1 foot away, and the sample in the center of the former OWS was collected from below the floor of the OWS.

All OWS field work is complete; there will be two closure reports. One will include the first three, and the second report will include the remaining 9. Ms. Constantinescu noted that the multi-OWS reports that will be submitted are acceptable because the investigation methods are all the same; however, her management has decided to issue separate NFA packages for each OWS due to ease of tracking.

EVO injections are ongoing at Sites FT004 and SS015. All injection tables are currently being used, so injections at Sites SD036 and SD031 will occur later once tables free up. All injections are using the nanoEVO.

Four monitoring wells have been installed at Site DP039. Step out wells will be installed in September, and will be screened at the alluvium-bedrock interface where contamination is encountered.

Field work started at Site TS060 in late June; the excavation started on 05 July. The current excavation work is for PAH contamination; the lead contamination will be addressed next.

C) Program Update: Activities Completed, In Progress, and Upcoming (see Attachment 9)

Mr. Wray reported on the status of fieldwork and documents which are completed, in progress, and upcoming. Updates from the briefing this month included:

Newly Completed Documents: none.

Newly Completed Fieldwork: Site OW056 Site Excavation/Closure.

In-Progress Documents (CERCLA): Community Relations Plan; Site SD034 Technology Demonstration Construction Completion Report; 2016 Annual GRISR; 2016 Annual CAMU Monitoring Report.

In-Progress Documents (POCO): POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054; Site FT004 POCO Soil Data Gap Investigation Work Plan

In-Progress Fieldwork (CERCLA): Site FT004 EVO Optimization; Site TS060 Removal Action; Site SS015 EVO Optimization; DP039 Install downgradient monitoring wells (2nd round); Well Development.

In-Progress Fieldwork (POCO): None.

Planned Documents (CERCLA): Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, and SS046 (Aug); Amendment to the Soil ROD for WABOU Sites DP039, SD043, and SS046 (Oct); Site SS016 Data Gap Investigation Technical Memorandum (TBD); Work Plan for Fourth Five-year Review (TBD).

Planned Documents (POCO): POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW050, OW052, OW055, OW056, and OW057 (TBD); Site ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum (TBD).

Fieldwork Planned (CERCLA): Site SD036 EVO Optimization (Aug); SD034 Install bollards around SBGR (Aug); Site DP039 Repair SBGR distribution headers (Aug); Site SD031 EVO Optimization (Aug); Site LF044 Sediment Sampling (2017).

Fieldwork Planned (POCO): Site FT004 POCO Soil Data Gaps Investigation (Sept)

Technology Demonstration Projects:

- Site SS014: Recycled Drywall Subgrade Biochemical Reactor “SBGR”.
 - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater.
 - Installation was completed November 2016.
 - First Quarter performance results:

- TPH-G: 99% reduction in source area (1,900 to 14 J mg/L), 18% for remaining 7 site wells
 - TPH-D: 98% reduction in source area (5,500 to 130 J mg/L), 33% for remaining 7 site wells
 - Benzene: 98% reduction (22 to <0.4 mg/L), 49% for remaining 7 site wells
- Multisite Bioaugmentation: EVO and KB-1 Plus.
 - Evaluate if addition of bioaugmentation substrate to an EVO injection will increase the rate of CVOC degradation.
 - Injections were completed (Nov 2016).
 - Limited TOC dispersal at Site SD036, so install additional injection wells and reinject with nanoEVO in 2017.
 - Too early to evaluate performance data.
- Site SD034: Washboard SBGR.
 - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater.
 - Installation was completed November 2016.
 - Installed six (6) SBGR trenches.
 - Too early to evaluate performance data.
- Site FT005: Distribution of EVO and KB-1 Plus.
 - Evaluate total organic carbon (TOC) dispersion distances and rates for optimizing the remediation of 1,2-dichloroethane (DCA) in groundwater.
 - Installation completed May 2016.
 - Slightly elevated TOC and reduced COC concentrations in the north, but too early to evaluate performance data.
 - May evaluate optimization of the GET in southern portion of site.
- Site FT004: Distribution of EVO via SBGR and/or Groundwater Extraction.
 - Determine effectiveness of TOC distribution through two different enhanced reductive dechlorination (ERD) approaches: (1) groundwater TOC recirculation using a combination EVO injection, infiltration SBGR trenches, and groundwater extraction; and (2) EVO injection with groundwater extraction.
 - Installation completed April 2016.
 - Limited TOC dispersal, additional EVO injection underway with nanoEVO to determine if this can enhance TOC dispersal.
 - COC concentrations have declined
 - ~50% total molar reduction plume-wide through first year
 - Max monitoring well TCE concentration reduced from 560 to 140 mg/L
- Site SD031: EVO distribution via Gravel Chimneys.
 - Determine if EVO injection and recirculation of groundwater through gravel chimneys can effectively distribute TOC horizontally in the subsurface to support ERD of 1,1-dichloroethene (DCE).
 - Installation completed in April 2015.
 - Early indications:
 - Reducing conditions have initiated as expected throughout the TD area and are supporting anaerobic degradation.
 - TOC concentrations are increasing at several wells.

- Recirculation through chimneys has been successful relative to our design assumptions.
- 1,1-DCE (primary COC) concentrations have reduced by 93% (sum of key wells within TD area, excluding two (2) wells to SW that increased).
- Total Molar concentration (sum of CVOCs) has reduced by 84% (sum of key wells within TD area, excluding two (2) wells to SW that increased).
- Four (4) new EVO wells installed to SW to enhance TOC in problem areas (plume being pulled back towards extraction well causing increasing concentrations in this area).

4. New Action Item Review

Mr. Wray will respond if groundwater at Site SD031 was ever sampled for hexavalent chromium, and will provide results if it has been.

5. PROGRAM/ISSUES/UPDATE

Mr. Fries requested that Mr. Duke notify Mr. Charlie Ridenour that he was able to attend the teleconference today, and asked to be copied on the email.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Monika O'Sullivan	Ms. O'Sullivan to provide updates on PFOS and PFOA as she becomes aware of them.	Ongoing	Open
2.	Mike Wray	Find out if groundwater at Site SD031 was ever sampled for hexavalent chromium, and report results if so.	16 August 2017	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
RESTORATION PROGRAM MANAGER'S MEETING

The RPM face-to-face meeting is scheduled for 9:30 PM PST on 16 August, 2017. **The call-in number is 1-866-203-7023. Enter the Participation code 5978-75-9736 then #.**

AGENDA

1. ADMINISTRATIVE

- A. INTRODUCTIONS
- B. PREVIOUS MEETING MINUTES
- C. ACTION ITEM REVIEW
- D. MASTER MEETING AND DOCUMENT SCHEDULE REVIEW

2. CURRENT PROJECTS

- A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE

3. PRESENTATIONS

- A. TRIAD DISCUSSION SITE FT005
- B. HISTORICAL HEXAVALENT CHROMIUM ANALYSES AT TRAVIS AFB
- C. COMMUNITY RELATIONS PLAN
- D. PROGRAM UPDATE:
DOCUMENTS & ACTIVITIES COMPLETED, IN PROGRESS AND PLANNED

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

MEETING SCHEDULE

NOTES: AFTER THE RPM MEETING, BASED ON THE DISCUSSION DURING THE REVIEW OF THE MASTER MEETING AND DOCUMENT SCHEDULE, WE ALLOW TIME TO HOLD A SEPARATE SPLINTER MEETING TO DISCUSS RESPONSES TO AGENCY COMMENTS ON THOSE DOCUMENTS THAT ARE IN PROGRESS, OR OTHER ISSUES IF NEEDED. ALL PARTICIPANTS ARE WELCOME TO PARTICIPATE.

(2017)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting¹ (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-18-17	—
02-15-17	—	—
—	03-15-17	—
04-20-17 (Thursday 2:00 PM)	—	04-20-17
—	05-17-17	—
06-21-17	—	—
—	07-19-17	—
08-16-17	—	—
—	09-20-17	—
10-19-17 (Thursday 2:00 PM)	—	10-19-17 ²
—	11-15-17	—
—	—	—

¹ Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

² Note: Tentative RAB tour date in lieu of RAB meeting.

(2018)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting¹ (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-17-18	—
02-21-18	—	—
—	03-21-18	—
04-19-18 (Thursday 2:00 PM)	—	04-19-18
—	05-16-18	—
06-20-18	—	—
—	07-18-18	—
08-15-18	—	—
—	09-19-18	—
10-18-18 (Thursday 2:00 PM)	—	10-18-18 ²
—	11-21-18	—
—	—	—

¹ Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

² Note: Tentative RAB tour date in lieu of RAB meeting.

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Community Relations Plan Travis AFB, Glenn Anderson CH2M, Jill Dunphy	Work Plan for the Fourth Five-year Review Travis AFB, Glenn Anderson Tetrattech, Joachim Eberharter	Amendment to the WABOU Soil ROD for the Travis AFB ERP Sites DP039, SD043, and SS046 Travis AFB, Glenn Anderson CH2M, Latonya Coleman
Scoping Meeting	NA	06-02-17	NA
Predraft to AF/Service Center	08-23-16	08-01-17	08-25-17
AF/Service Center Comments Due	09-07-16	09-01-17	09-25-17
Draft to Agencies	09-28-16	09-19-17	10-31-17
Draft to RAB	09-28-16	09-19-17	10-31-17
Agency Comments Due	10-28-16 (11-28-16)	10-19-17	01-02-18
Response to Comments Meeting	TBD	10-26-17	01-17-18
Agency Concurrence with Remedy	NA	NA	NA
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA
Response to Comments Due	TBD	11-06-17	01-31-18
Draft Final Due	TBD	11-06-17	01-31-18
Final Due	TBD	12-06-17	03-05-18

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Potrero Hills Annex Travis, Glenn Anderson		
	FS	Proposed Plan	ROD
Scoping Meeting	180 days after Water Board Order Rescinded	+470 days	+735 days
Predraft to AF/Service Center	+ 270 days	+530 days	+ 915 days
AF/Service Center Comments Due	+ 300 days	+560 days	+ 975 days
Draft to Agencies	+330 days	+590 days	+ 1035 days
Draft to RAB	+ 330 days	+590 days	+ 1035 days
Agency Comments Due	+390 days	+650 days	+ 1095 days
Response to Comments Meeting	+ 405 days	+665 days	+ 1110 days
Agency Concurrence with Remedy	NA	NA	+ 1130 days
Public Comment Period	NA	+735 to 765 days	NA
Public Meeting	NA	+745 days	NA
Response to Comments Due	+430 days	+695days	+ 1190 days
Draft Final Due	+430 days	+695 days	+ 1190 days
Final Due	+460 days	+725 days	+ 1250 days

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS		
Life Cycle	Data Gap Investigation Results Technical Memorandum for Soil Sites SD033, SD043, and SS046 Travis AFB, Glenn Anderson CH2M, Leslie Royer	Data Gap Investigation Results Technical Memorandum for Soil Site SS016 Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA
Predraft to AF/Service Center	07-26-17	08-16-17
AF/Service Center Comments Due	08-09-17	08-30-17
Draft to Agencies	08-24-17	09-15-17
Draft to RAB	08-24-17	09-15-17
Agency Comments Due	09-25-17	10-16-17
Response to Comments Meeting	10-19-17	10-19-17
Response to Comments Due	11-02-17	11-03-17
Draft Final Due	NA	NA
Final Due	11-02-17	11-03-17
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

SECONDARY POCO DOCUMENTS	
Life Cycle	Site FT004 POCO Soil Data Gap Investigation Work Plan Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA
Predraft to AF/Service Center	06-03-16
AF/Service Center Comments Due	06-17-16
Draft to Agencies	07-19-16
Draft to RAB	07-19-16
Agency Comments Due	08-19-16
Response to Comments Meeting	09-21-16
Response to Comments Due	10-06-16 (08-03-17)
Draft Final Due	NA
Final Due	10-06-16 (08-03-17)
Public Comment Period	NA
Public Meeting	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	Quarterly Newsletters (October 2017) Travis, Glenn Anderson	2016 Annual GRISR Travis AFB, Glenn Anderson CH2M, Leslie Royer
Scoping Meeting	NA	NA
Predraft to AF/Service Center	NA	04-21-17
AF/Service Center Comments Due	NA	05-22-17
Draft to Agencies	09-22-17	06-07-17
Draft to RAB	NA	06-07-17
Agency Comments Due	10-06-17	08-10-17 (08-24-17)
Response to Comments Meeting	TBD	08-16-17 (09-20-17)
Response to Comments Due	10-10-17	09-01-17 (10-06-17)
Draft Final Due	NA	NA
Final Due	10-12-17	09-01-17 (10-06-17)
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	2016 Annual CAMU Monitoring Report Travis AFB, Glenn Anderson CH2M, Levi Pratt	Site SD034 Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M, Levi Pratt
Scoping Meeting	NA	NA
Predraft to AF/Service Center	02-09-17	03-23-17
AF/Service Center Comments Due	02-24-17	04-06-17
Draft to Agencies	06-30-17	05-02-17
Draft to RAB	06-30-17	05-02-17
Agency Comments Due	07-31-17	06-02-17
Response to Comments Meeting	08-16-17	06-21-17 (07-19-17)
Response to Comments Due	08-30-17	07-06-17 (08-11-17)
Draft Final Due	NA	NA
Final Due	08-30-17	07-06-17 (08-11-17)
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL POCO DOCUMENTS			
Life Cycle	POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW051, OW053, and OW054 Travis AFB, Glenn Anderson CH2M, Doug Berwick	POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW050, OW052, OW055, OW056, and OW057 Travis AFB, Glenn Anderson CH2M, Doug Berwick	Site ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum Travis AFB, Glenn Anderson CH2M, Doug Berwick
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	11-07-16	02-01-17	04-25-17
AF/Service Center Comments Due	11-21-16	02-15-17	05-09-17
Draft to Agencies	01-19-17	09-29-17	09-08-17
Draft to RAB	01-19-17	09-29-17	09-08-17
Agency Comments Due	02-21-17	10-30-17	10-09-17
Response to Comments Meeting	03-15-17	11-15-17	10-19-17
Response to Comments Due	09-13-17	12-06-17	11-08-17
Draft Final Due	NA	NA	NA
Final Due	09-13-17	12-06-17	11-08-17
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

South Base Boundary Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 200

Reporting Period: 31 May 2017 – 28 June 2017

Date Submitted: 17 July 2017

This monthly data sheet presents information regarding the South Base Boundary Groundwater Treatment Plant (SBBGWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the June 2017 reporting period.

Table 1 – Operations Summary – June 2017				
Initial Data Collection:		5/31/2017 15:30	Final Data Collection:	6/28/2017 15:00
Operating Time:		Percent Uptime:	Electrical Power Usage:	
SBBGWTP:	287 hours	SBBGWTP:	42.7%	SBBGWTP: 5,105 kWh (4,578 lbs CO ₂ generated ^a)
Gallons Treated: 1.8 million gallons*			Gallons Treated Since July 1998: 977 million gallons	
Volume Discharged to Union Creek: 1.8 million gallons			Gallons Treated From Other Sources: 0 gallons	
VOC Mass Removed: 0.54 lbs ^b			VOC Mass Removed Since July 1998: 487.5 lbs	
Rolling 12-Month Cost per Pound of Mass Removed: \$14,787 ^c				
Monthly Cost per Pound of Mass Removed: \$12,509 ^c				
lbs = pounds				
* - Total gallons treated in June 2017 includes water from the Site FT005 and Site SS030 aquifer tests.				
^a SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 800 pounds of GHG from GAC change out.				
^b Calculated using June 2017 EPA Method SW8260C analytical results.				
^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.				

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

Table 2 – SBBGWTP Average Flow Rate (gpm) ^a – June 2017							
FT005 ^b				SS029		SS030	
EW01x05	Offline	EW736x05	Offline	EW01x29	1.5	EW01x30	14.8
EW02x05	Offline	EW737x05	Offline	EW02x29	3.6	EW02x30	1.2
EW03x05	Offline	EW742x05	Offline	EW03x29	3.6	EW03x30	15.6
EW731x05	5.3	EW743x05	5.8	EW04x29	Offline ^c	EW04x30	Offline ^c
EW732x05	Offline	EW744x05	Offline ^c	EW05x29	6.4	EW05x30	17.0
EW733x05	Offline	EW745x05	Offline ^c	EW06x29	0.5	EW2174x30	10.5
EW734x05	Offline ^c	EW746x05	Offline	EW07x29	0.1	EW711x30	1.8
EW735x05	1.2	EW2291x05	10.2				
FT005 Total: 22.5				SS029 Total: 15.7		SS030 Total: 60.9	
SBBGWTP Average Monthly Flow ^d : 102.2 gpm							
^a Flow rates presented are instantaneous measurements taken on 5 June 2017 prior to the wells being turned off in preparation for the aquifer test.							
^b Most extraction wells at FT005 were taken offline in accordance with the 2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.							
^c These extraction wells are offline due to pump or other malfunction.							
^d The average SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time the system was operational.							
gpm – gallons per minute							
SBBGWTP – South Base Boundary Groundwater Treatment Plant							

Table 3 presents a summary of system shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns					
Location	Shutdown ^a		Restart ^a		Cause
	Date	Time	Date	Time	
SBBGWTP (FT005 only)	31 May 2017	16:00	1 June 2017	08:45	FT005 extraction wells shut down in preparation for aquifer test at Site FT005. Restarted due to scheduling change of aquifer tests.
SBBGWTP (FT005 only)	7 June 2017	15:10	--	--	FT005 extraction wells shut down in preparation for aquifer test at Site FT005. Extraction wells at Sites SS029 and SS030 remained on line.
SBBGWTP	12 June 2017	14:25	--	--	System shut down for aquifer test at Sites FT005 and SS030. System remained off line for the remainder of the reporting period.
-- = Time not recorded ^a Shutdown and restart times estimated based on field notes SBBGWTP = South Base Boundary Groundwater Treatment Plant					

Summary of O&M Activities

Analytical data from the 5 June 2017 sampling event are presented in Table 4. The total VOC concentration (36.57 µg/L) in the influent sample has increased from the May 2017 sample results (32.92 µg/L). TCE (34.0 µg/L), cis-1,2-DCE (2.14 µg/L), 1,2-DCA (0.18 J µg/L), and chloroform (0.25 J µg/L) were detected at the influent sampling location. Several VOCs were detected in the midpoint sampling location at trace concentrations, including cis-1,2-DCE, 1,2-DCA, and chloroform. In addition, acetone, a common laboratory contaminant, was detected in the midpoint sampling location. No VOCs were detected at the effluent sampling location.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall increase in the VOC influent concentration has been observed in the past twelve months along with an increasing flow rate trend.

On 31 May, the FT005 extraction wells were shut down in preparation for the aquifer testing. However, because of a schedule delay, the FT005 extraction wells were restarted on 1 June. On 7 June, the FT005 extraction wells were once again shut down in preparation for the aquifer testing. On 12 June, the rest of the SBBGWTP extraction wells were shut down for the aquifer testing, and the system remained off line for the remainder of the reporting period.

Optimization Activities

No optimization activities occurred at the SBBGWTP in June 2017.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as taking extraction pumps off line that are no longer necessary for contaminant plume capture.

Figure 2 presents the historical GHG production from the SBBGWTP. In June 2017, the SBBGWTP produced approximately 4,578 pounds of GHG, which includes approximately 800 pounds of GHG generated from changing out the GAC.

TABLE 4

Summary of Groundwater Analytical Data For June 2017 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	5 June 2017 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Acetone	NA	1.0	0	ND	2.17 J	ND
Bromodichloromethane	NA	0.15	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	0.25 J	0.24 J	ND
Chloromethane	NA	0.15	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.18 J	0.18 J	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	2.14	0.29 J	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.15	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.15	0	ND	ND	ND
Trichloroethene	5.0	0.15	0	34.0	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.15	0	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND
Toluene	5.0	0.15	0	ND	ND	ND
Xylenes	5.0	0.15 – 0.30	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	35	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	24	0	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	50 (trigger)	24	0	ND	NM	ND

* In accordance with Appendix B of the Travis AFB South Base Boundary Groundwater Treatment Plant Operations and Maintenance Manual (CH2M HILL, 2004).

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

mg/L = milligrams per liter

NA = not applicable

N/C = number of samples out of compliance with discharge limits

ND = not detected

NM = not measured

µg/L = micrograms per liter

Figure 1
SBBGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

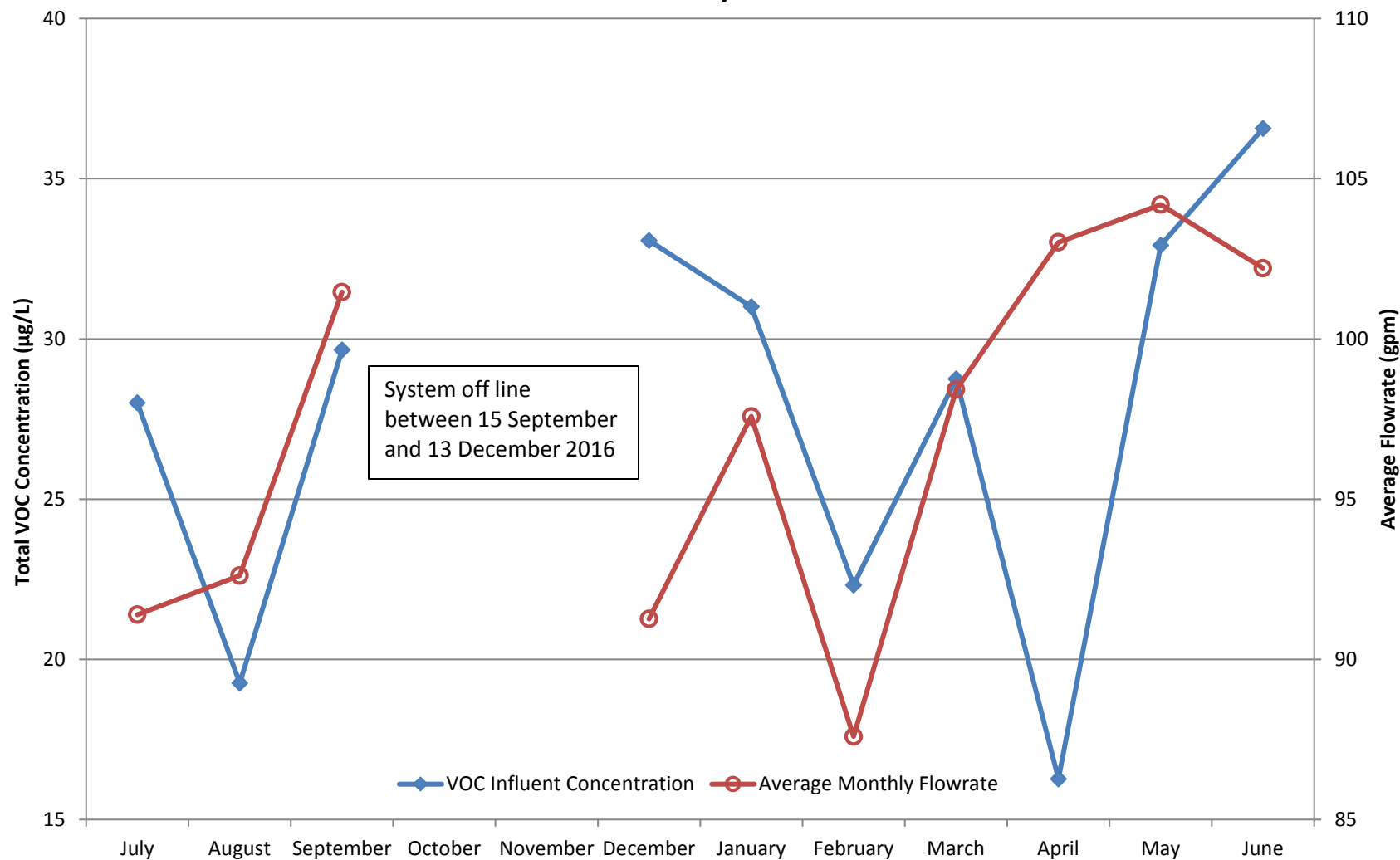
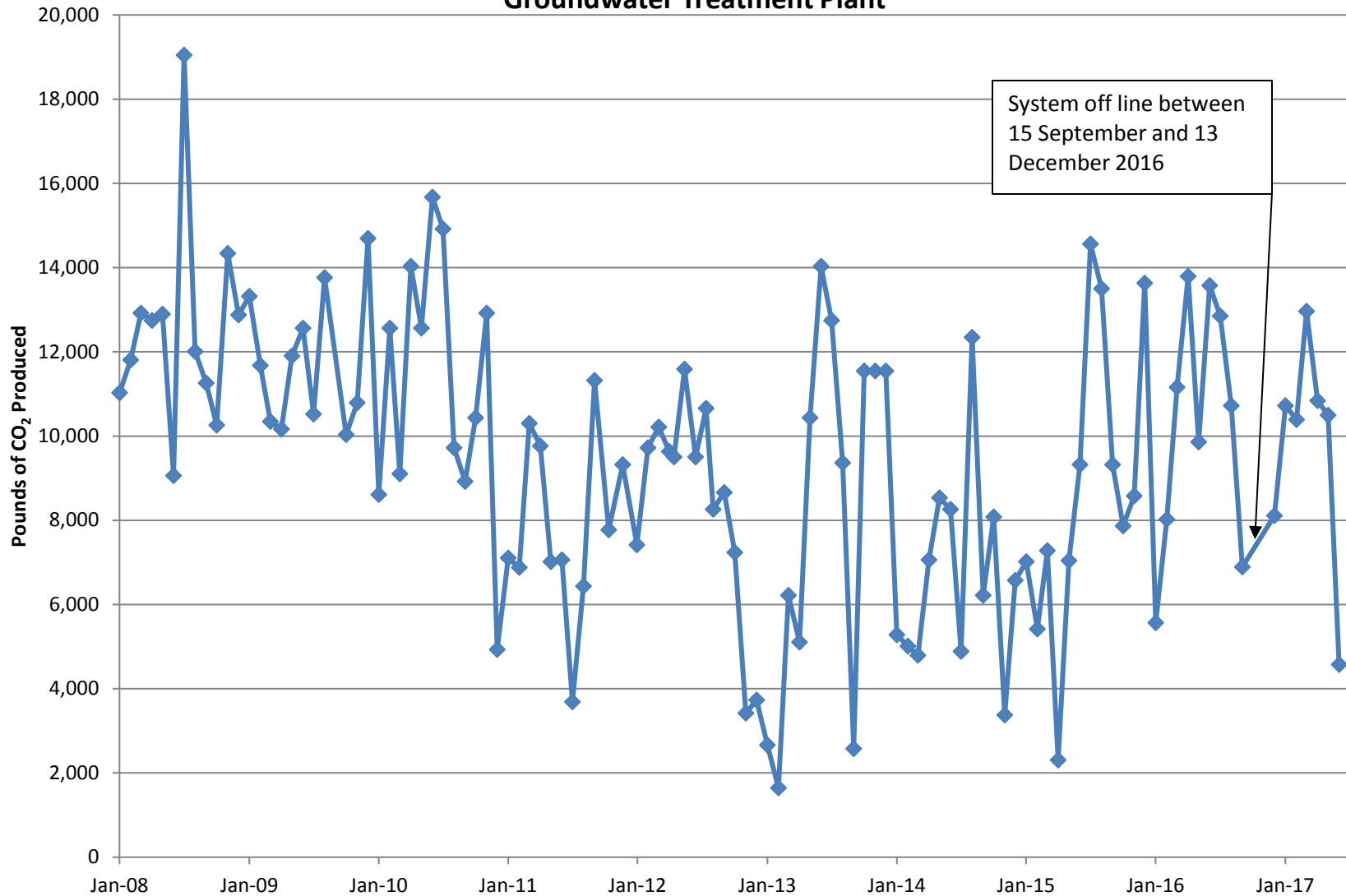


Figure 2

**Equivalent Pounds of Carbon Dioxide Produced by the South Base Boundary
Groundwater Treatment Plant**



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 215

Reporting Period: 31 May 2017 – 29 June 2017

Date Submitted: 17 July 2017

This monthly data sheet presents information regarding the Central Groundwater Treatment Plant (CGWTP) and its associated technology demonstrations. The ongoing technology demonstrations related to the CGWTP include various emulsified vegetable oil (EVO) injections and two (2) bioreactor treatability studies.

System Metrics

Table 1 presents operational data from the June 2017 reporting period.

Table 1 – Operations Summary – June 2017				
Initial Data Collection:		5/31/2017 16:40	Final Data Collection:	6/29/2017 11:30
Operating Time:		Percent Uptime:	Electrical Power Usage:	
CGWTP:	379 hours	CGWTP:	54.9%	CGWTP: 1,384 kWh (1,912 lbs CO ₂ generated ^a)
Gallons Treated (discharge to storm sewer): 808,390 gallons		Gallons Treated Since January 1996: 541.3 million gallons		
VOC Mass Removed from groundwater: 1.55 lbs ^b		VOC Mass Removed Since January 1996: 2,779 lbs from groundwater 8,686 lbs from vapor		
Rolling 12-Month Cost per Pound of Mass Removed: \$2,217 ^c				
Monthly Cost per Pound of Mass Removed: \$4,151 ^c				
^a SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 888 pounds of GHG from GAC change out.				
^b Calculated using May 2017 EPA Method SW8260C analytical results.				
^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.				

Table 2 presents individual extraction well flow rates during the monthly reporting period.

Table 2 – CGWTP Average Flow Rates ^a – June 2017	
Location	Average Flow Rate Groundwater (gpm)
EW001x16	15.0
EW002x16	11.3
EW003x16	0.1 ^b
EW605x16	6.7
EW610x16	3.1
CGWTP	35.5
^a Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.	
^b Flow rate estimated. No gallons recorded during June 2017.	
gpm = gallons per minute	

Table 3 presents a summary of shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns					
Location	Shutdown^a		Restart		Cause
	Date	Time	Date	Time	
CGWTP	Various	--	Various	--	Intermittent shutdowns due to influent and effluent tank high level conditions.
CGWTP	--	--	14 June 2017	14:00	Installed a new Ultrasonic meter sensor in the effluent tank.
CGWTP	15 June 2017	11:10	15 June 2017	13:15	Replace low low float in the effluent tank.
CGWTP	20 June 2017	08:00	20 June 2017	12:00	Replaced high high float in the influent tank.
-- = Date/Time not recorded ^a Shutdown and restart times estimated based on field notes CGWTP = Central Groundwater Treatment Plant					

Summary of O&M Activities

Because of the intermittent shutdowns in the first half June 2017, monthly groundwater samples were not collected at the CGWTP in June. Monthly samples will be collected in July 2017. Figure 1 presents a plot of influent concentrations (total VOCs) and the influent flow rate at the CGWTP versus time for the past twelve (12) months. The influent concentrations have remained relatively steady with a slight decreasing trend over the past 12 months. The overall flow rate through the treatment plant has increased over the past 12 months. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough in July 2017.

In the first half of June 2017, the CGWTP continued to have float switch malfunctions in the influent tank that caused frequent system shutdowns. On 14 June, a new Ultrasonic meter sensor was installed on the influent tank, and on 15 June, a new low-low float switch was installed, also in the influent tank. On 20 June, a new high-high float switch was installed in the influent tank. Since 20 June, the CGWTP has been operational without any further shutdowns. It is estimated that the CGWTP was shut down for approximately 312 hours during these intermittent outages.

The Site DP039 subgrade biogeochemical reactor (SBGR), also known as a bioreactor, continued to operate in a “pulsed mode” in an effort to optimize distribution of total organic carbon (TOC). During this optimization effort, the pulsed mode operation will consist of three (3) different time scales: one week, two week, and four week pulsed modes. Samples were collected after each round of pulsed mode operation. The optimal pulsed-mode frequency will be implemented in July 2017 based on a review of the sample results. Additionally, the infiltration manifold to the Site DP039 bioreactor has become increasingly clogged. The infiltration manifold will be replaced during the 2017 construction season.

Optimization Activities

No optimization activities occurred at the CGWTP in June 2017. As discussed above, the Site DP039 bioreactor is undergoing an optimization effort to determine the most effective pulse mode duration to optimize distribution of TOC in the subsurface. The optimal pulsed-mode frequency will be implemented in July 2017.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the systems associated with the CGWTP. The CGWTP produced approximately 1,912 pounds of GHG during June 2017. This is an increase from the May 2017 amount of 1,416 pounds because of the increased operational uptime.

Table 4 presents a twelve month summary of the Site DP039 bioreactor recirculation well pulsing dates.

Table 4 – Summary of DP039 Bioreactor “Pulsed Mode” Operations		
Location	Pulse-on Date	Pulse-off Date
MW750x39	27 May 2016	17 June 2016
	1 July 2016	19 July 2016
	2 August 2016	12 August 2016
	26 August 2016	8 September 2016
	10 October 2016	17 October 2016
	25 October 2016	2 November 2016
	29 November 2016	13 December 2016
	27 December 2016	10 January 2017
	7 February 2017	7 March 2017
	5 April 2017	
MW = Monitoring Well		

Figure 1

CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

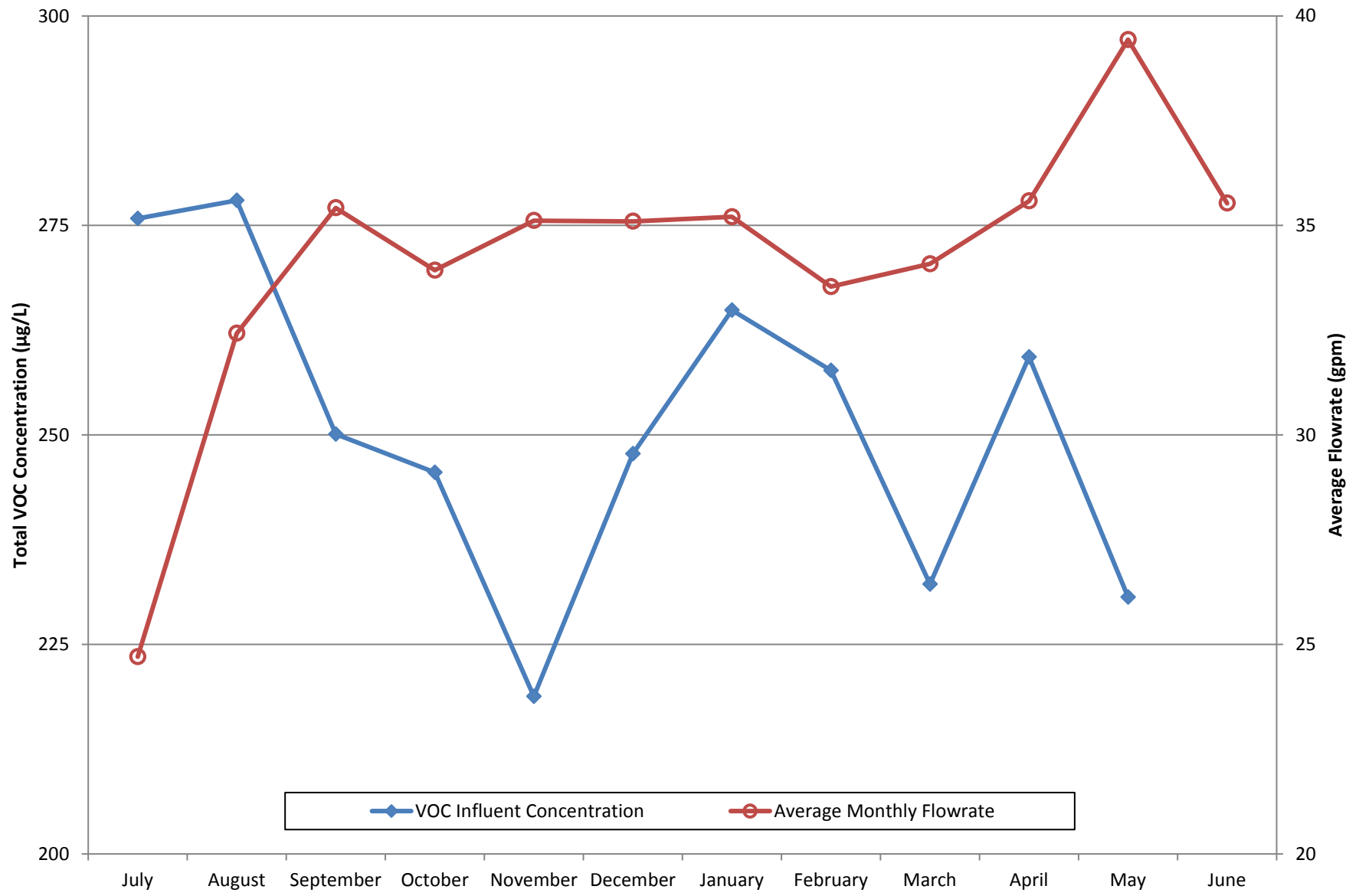
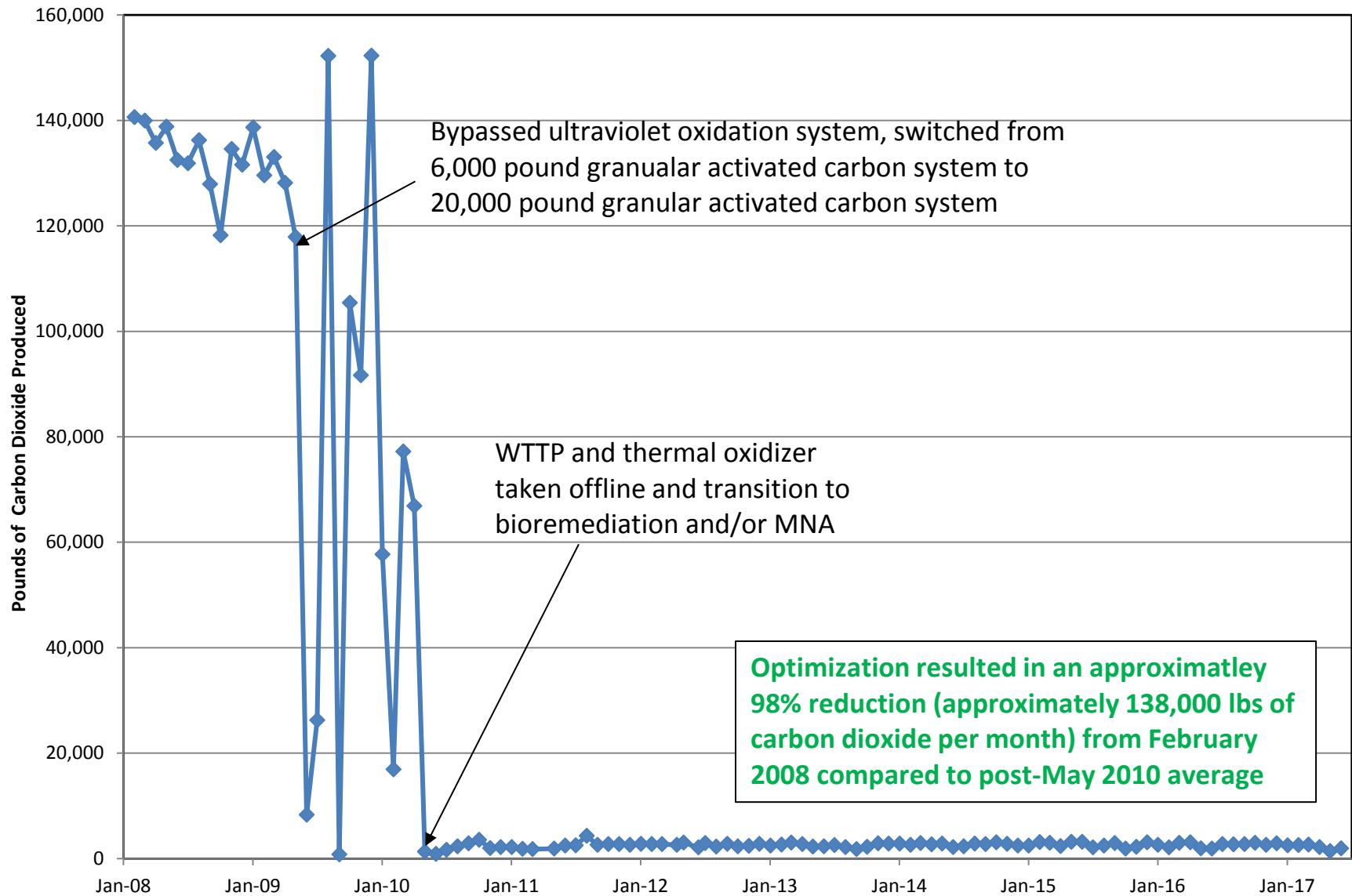


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Central Groundwater Treatment Plant



Subarea LF007C Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 159

Reporting Period: 25 May 2017 – 29 June 2017

Date Submitted: 17 July 2017

This monthly data sheet presents information regarding the Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the June 2017 reporting period:

Table 1 – Operations Summary – June 2017				
Initial Data Collection:		5/25/2017 08:20	Final Data Collection:	6/29/2017 10:50
Operating Time:		Percent Uptime:		Electrical Power Usage ^a :
LF007C GWTP:	793 hours	LF007C GWTP	94.1%	LF007C GWTP: 0 kWh
Gallons Treated: 241,940 gallons		Gallons Treated Since March 2000: 86.1 million gallons		
Volume Discharged to Duck Pond: 241,940 gallons				
VOC Mass Removed: 1.01 x 10 ⁻³ pounds ^b		VOC Mass Removed Since March 2000: 174.37 pounds (Groundwater)		
Rolling 12-Month Cost per Pound of Mass Removed: Not Measured ^c				
Monthly Cost per Pound of Mass Removed: Not Measured ^c				
^a The LF007C GWTP operates on solar power only.				
^b VOCs from May 2017 influent sample detected by EPA Method SW8260C.				
^c Value not calculated since measurement does not accurately represent the cost effectiveness of the system.				

Table 2 presents individual extraction well flow rates during the monthly reporting period.

Table 2 – LF007C GWTP Average and Total Flow Rates – June 2017		
Location	Average Flow Rate (gpm) ^a	Total Gallons Processed (gallons)
EW614x07	4.3	205,760
EW615x07	0.7	34,730
LF007C GWTP	5.1	241,940
^a Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings. gpm = gallons per minute		

Table 3 presents a summary of shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns					
Location	Shutdown^a		Restart^a		Cause
	Date	Time	Date	Time	
LF007C GWTP	11 December 2016	04:10	25 May 2017	08:20	Shut down due to vernal pools. Restarted when dry.
LF007C GWTP	25 May 2017	13:30	26 May 2017	09:30	Shut down while awaiting analytical results.
LF007C GWTP	19 June 2017	8:30	20 June 2017	14:30	Possible high pressure fault.
-- = Time not recorded					
^a Shutdown and restart times estimated based on field notes					
LF007C GWTP = Subarea LF007C Groundwater Treatment Plant					

Summary of O&M Activities

The LF007C GWTP was shut down on 11 December 2016 because the treatment pad sump flooded with rainwater. The LF007C GWTP was taken off line on 16 December 2016 when vernal pools formed at Subarea LF007C. After the vernal pools had dried up in May 2016, the LF007C GWTP was restarted on 25 May 2017, treatment plant samples were collected and the system was shut down on the same day while awaiting the sample results. The EPA decided that the LF007C GWTP may be operational prior to receiving the sample results; therefore, the system was restarted on 26 May 2017.

The May 2017 analytical data are presented in Table 4. TCE (0.50 µg/L) was detected at the influent sample location. No VOC contaminants were detected at the midpoint and final effluent sampling locations. However, acetone, a common laboratory contaminant, was detected in the midpoint sampling location. Analytical data continue to indicate effective treatment of the influent process stream.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve months. VOC concentrations, primarily TCE, have been seasonally variable; however, over the last twelve months the trend has been decreasing. The average flow rate through the LF007C GWTP in June 2017 (5.09 gpm) increased from the flow rate measured in December 2016 (3.59 gpm). The increase may be a result of the above average rainy season in 2016/2017.

On 19 June, the LF007C GWTP shut down because of a possible high pressure fault. On 20 June, the system was restarted without issue and remained operational for the remainder of the reporting period.

Optimization Activities

No optimization activities occurred at the LF007C GWTP in June 2017.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the system.

Figure 2 presents the historical GHG production from the systems associated with the NGWTP and LF007C GWTP. The LF007C GWTP is now a solar-only operated treatment system and no longer generates GHG, with exception of a small amount of GHG generated from changing out the GAC.

TABLE 4

Summary of Groundwater Analytical Data For May 2017 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	25 May 2017 (µg/L)		
				Influent	After Carbon 1	Effluent
Halogenated Volatile Organics						
Acetone	NA	0.50	0	ND	2.91 J	ND
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Bromoform	5.0	0.15	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND
Dibromochloromethane	5.0	0.15	0	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
2-Hexanone	NA	0.50	0	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.15	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.15	0	ND	ND	ND
Trichloroethene	5.0	0.15	0	0.50	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.15	0	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND
Toluene	5.0	0.15	0	ND	ND	ND
Xylenes	5.0	0.15 – 0.30	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	35	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	23.9	0	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100	23.9	0	ND	NM	ND

* In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

NA = not applicable

N/C = number of samples out of compliance with discharge limits

ND = not detected

NM = not measured

µg/L = micrograms per liter

mg/L = milligrams per liter

Figure 1

LF007CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

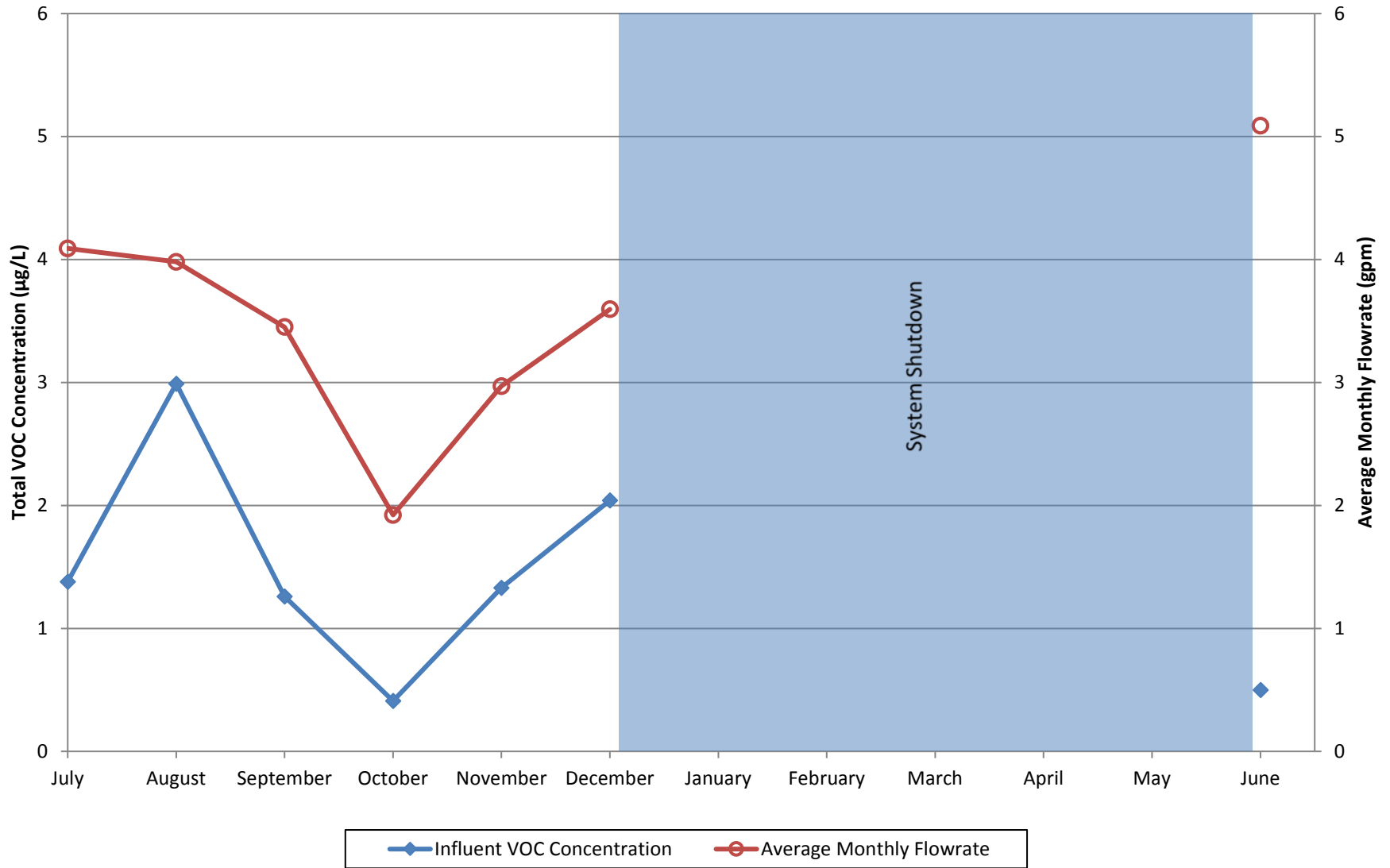
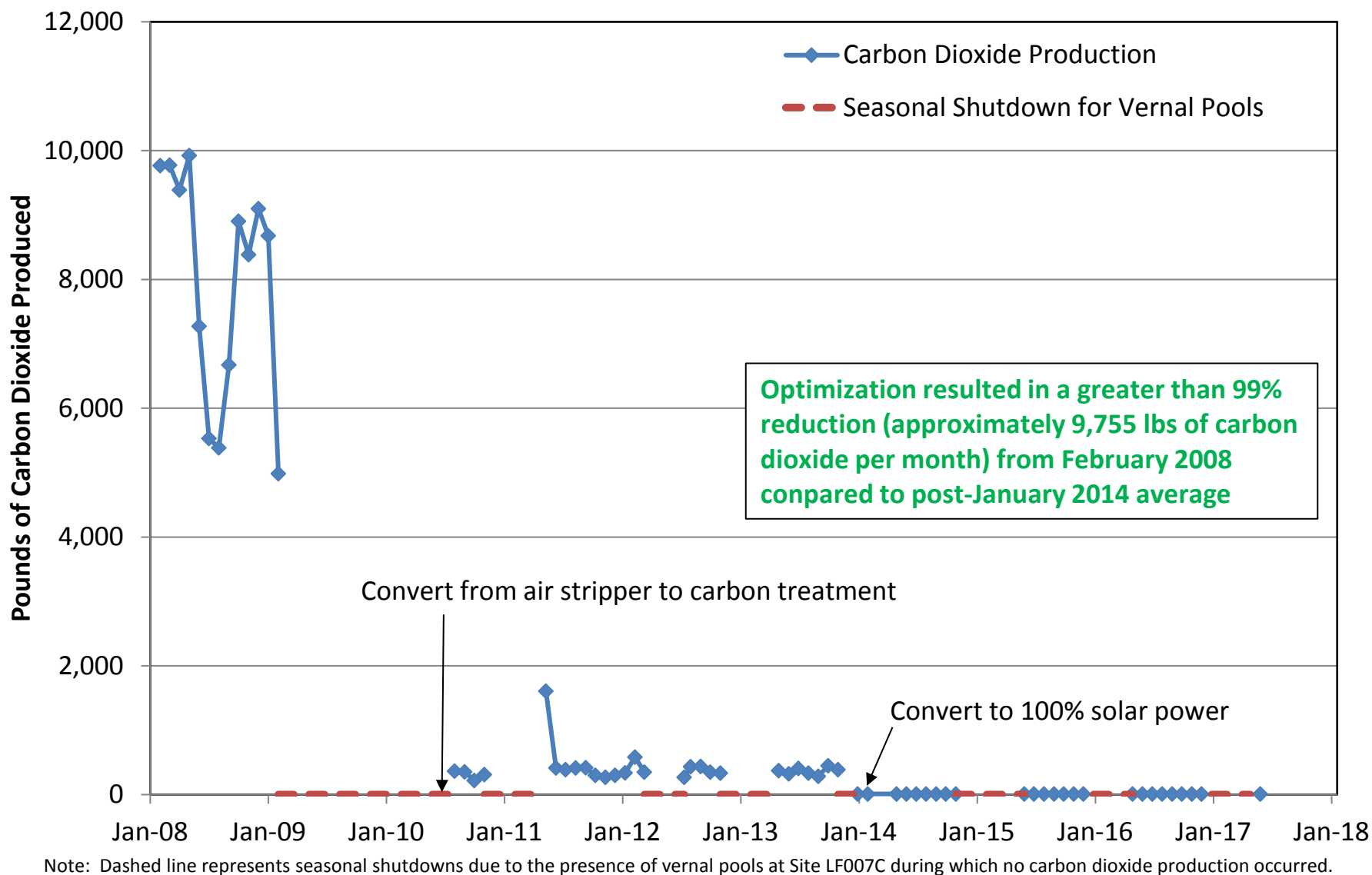


Figure 2
Equivalent Pounds of Carbon Dioxide Produced by the NGWTP/LF007C GWTP



Site ST018 Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 076

Reporting Period: 31 May 2017 – 29 June 2017

Date Submitted: 17 July 2017

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (ST018GWTP).

System Metrics

Table 1 presents operation data from the June 2017 reporting period.

Table 1 – Operations Summary – June 2017			
Initial Data Collection: 5/31/2017 13:00		Final Data Collection: 6/29/2017 12:00	
Operating Time:		Percent Uptime:	
ST018GWTP: 647 hours		ST018GWTP: 93.1%	
		ST018GWTP: 157 kWh (116 lbs CO ₂ generated ^a)	
Gallons Treated: 268,430 gallons		Gallons Treated Since March 2011: 13.0 million gallons	
Volume Discharged to Sanitary Sewer: 268,430 gallons		Final Totalizer Reading: 12,964,189 gallons	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: 6,468,015 gallons			
MTBE, BTEX, VOC, TPH Mass Removed: 0.04 lbs ^b		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: 41.7 lbs	
MTBE (Only) Removed: 0.04 lbs ^b		MTBE (Only) Mass Removed Since March 2011: 10.2 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$17,753 ^{bc}			
Monthly Cost per Pound of Mass Removed: \$64,641 ^{bc}			
^a SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG.			
^b Calculated using June 2017 EPA Method SW8260C and SW8015B analytical results.			
^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.			
kWh = kilowatt hour			
lbs = pounds			

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

Table 2 – ST018GWTP Average Flow Rates – June 2017		
Location	Average Flow Rate Groundwater (gpm)^a	Hours of Operation
EW2014x18	1.7	647
EW2016x18	1.2	647
EW2019x18	1.9	647
EW2333x18	1.8	647
Site ST018 GWTP	6.9	647
^a Flow rates calculated by dividing total gallons processed by amount of operating time of the pump/system. gpm = gallons per minute ST018GWTP = Site ST018 Groundwater Treatment Plant		

Table 3 presents a summary of shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns					
Location	Shutdown^a		Restart^a		Cause
	Date	Time	Date	Time	
ST018GWTP	18 June 2017	15:30	20 June 2017	15:05	Bag filter high pressure.
-- = Time not recorded ^a Shutdown and restart times estimated based on field notes ST018GWTP = Site ST018 Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the ST018GWTP on 5 June 2017. Results are presented in Table 4. The complete June 2017 laboratory data report is available upon request. The influent concentration for MTBE during the June 2017 sampling event was 20.3 µg/L, which is an increase from the May 2017 sample result of 9.14 µg/L. Benzene and 1,2-DCA were also detected in the influent sample. MTBE was detected in the system effluent sampling location at a concentration of 2.43 µg/L.

All concentrations of TPH are well below the Fairfield-Suisun Sewer District effluent limitation of 50,000 µg/L for TPH-g and TPH-d, or 100,000 µg/L for TPH-mo. Additionally, the Fairfield-Suisun Sewer District does not currently have a local limit for MTBE, but a limit of 6,400 µg/L is advised based on worker health and safety. Travis AFB will continue to monitor influent and effluent contaminant concentrations to maintain compliance with the Fairfield-Suisun Sewer District discharge permit.

Figure 1 presents plots of the average flow rate and influent total contaminant (MTBE, TPH-g, TPH-d, TPH-mo, BTEX, and VOCs) and MTBE concentrations at the ST018GWTP over the past twelve (12) months. The average flow rate through the ST018GWTP steadily decreased between July 2016 and January 2017; however, flow rates began to increase in February 2017 and have remained elevated since March 2017. The total influent concentrations have generally been decreasing over the past 12 months with the exception of April 2017. The overall decrease is largely due to the decrease in TPH-g concentrations. The influent MTBE concentration has also generally been decreasing over the past 12 months.

On 18 June 2017, the ST018GWTP was shut down because of high pressures in the bag filters. On 20 June 2017, the bag filters were replaced and the system was restarted without issue.

Optimization Activities

No optimization activities occurred at the ST018GWTP in June 2017.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the ST018GWTP system.

Figure 2 presents the historical GHG production from the ST018GWTP. The ST018GWTP produced 116 pounds of GHG during June 2017 and treated 268,430 gallons of water, which was a decrease from May 2017 (123 pounds, treating 282,240 gallons). The amount of GHG produced is directly attributed to the amount of water treated through the system because the only line-power electrical use is for a transfer pump through the GAC system.

TABLE 4

Summary Of Groundwater Analytical Data for June 2017– Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	5 June 2017 (µg/L)	
				Influent	System Effluent
Fuel Related Constituents					
Methyl tert-Butyl Ether	6,400	0.15	0	20.3	2.43
Benzene	25,000 ^a	0.15	0	0.18 J	ND
Ethylbenzene	25,000 ^a	0.15	0	ND	ND
Toluene	25,000 ^a	0.15	0	ND	ND
Total Xylenes	25,000 ^a	0.15 – 0.30	0	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50,000 ^b	35	0	ND	ND
Total Petroleum Hydrocarbons – Diesel	50,000 ^b	24	0	ND	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	24	0	ND	ND
Other					
Acetone	NA	1.0	0	ND	ND
1,2-Dichloroethane	20	0.15	0	0.33 J	ND

* In accordance with the Fairfield-Suisun Sewer District Effluent Limitations

Laboratory data available on request.

a – The limit of 25,000 µg/L is a combined limit for BTEX.

b – The limit of 50,000 µg/L is a combined limit for TPH-g and TPH-d

µg/L = micrograms per liter

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

NA = not applicable

N/C = number of samples out of compliance with discharge limits

ND = not detected above method detection limit

NM = not measured this month

Figure 1
ST018GWTP Total VOC and MTBE Influent Concentrations
and Average Flowrate Twelve Month History

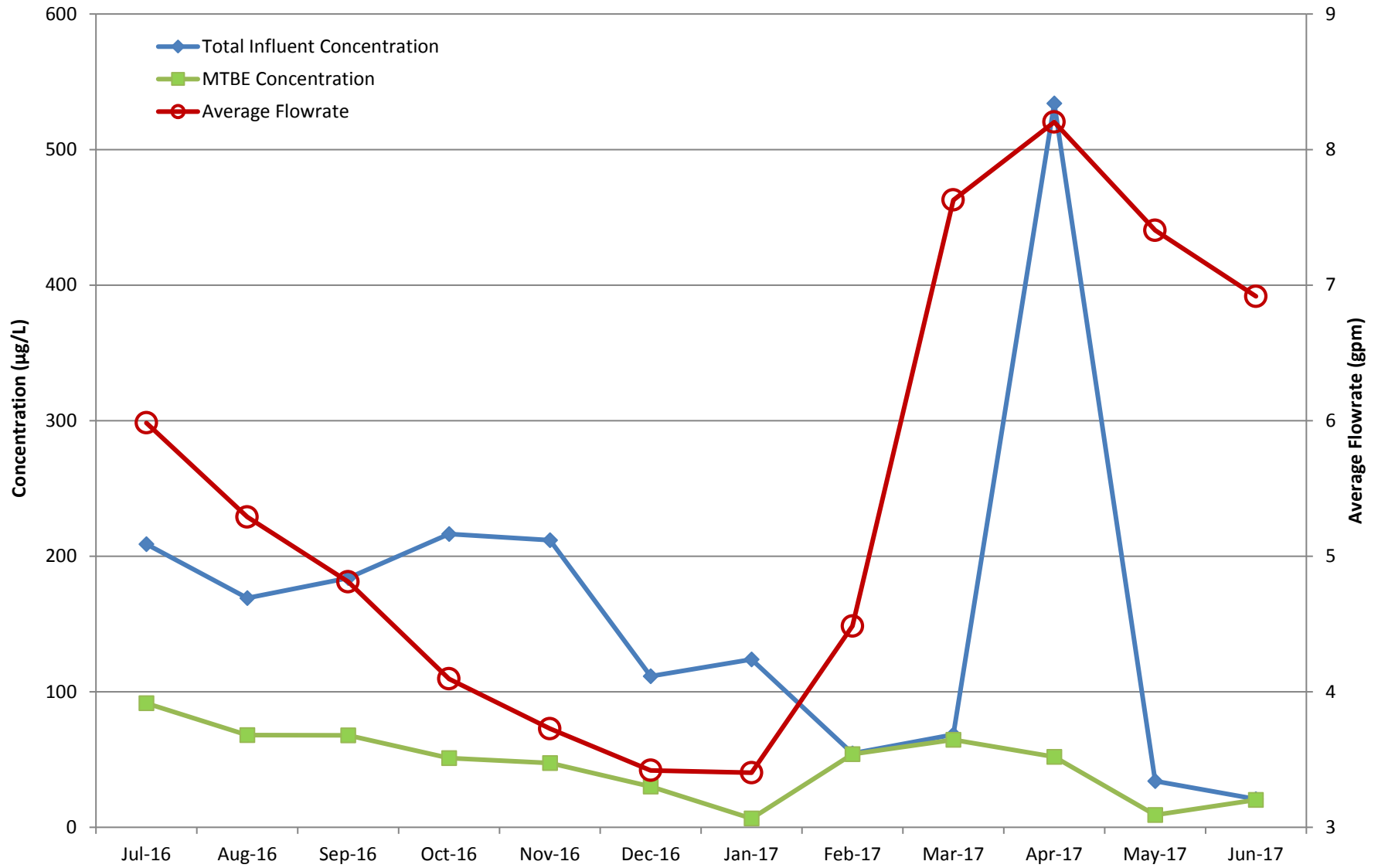
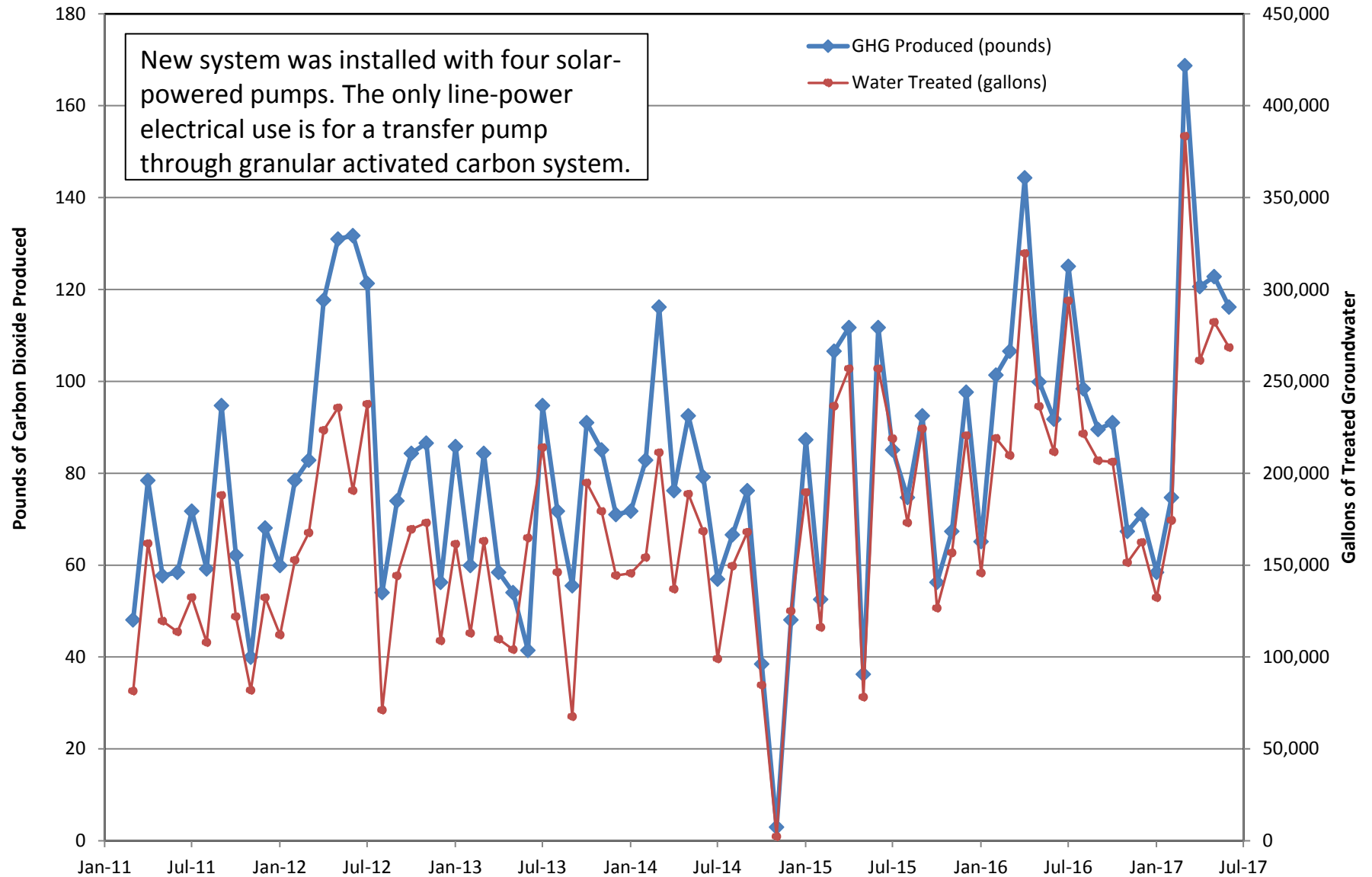


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Site ST018 Groundwater Treatment Plant



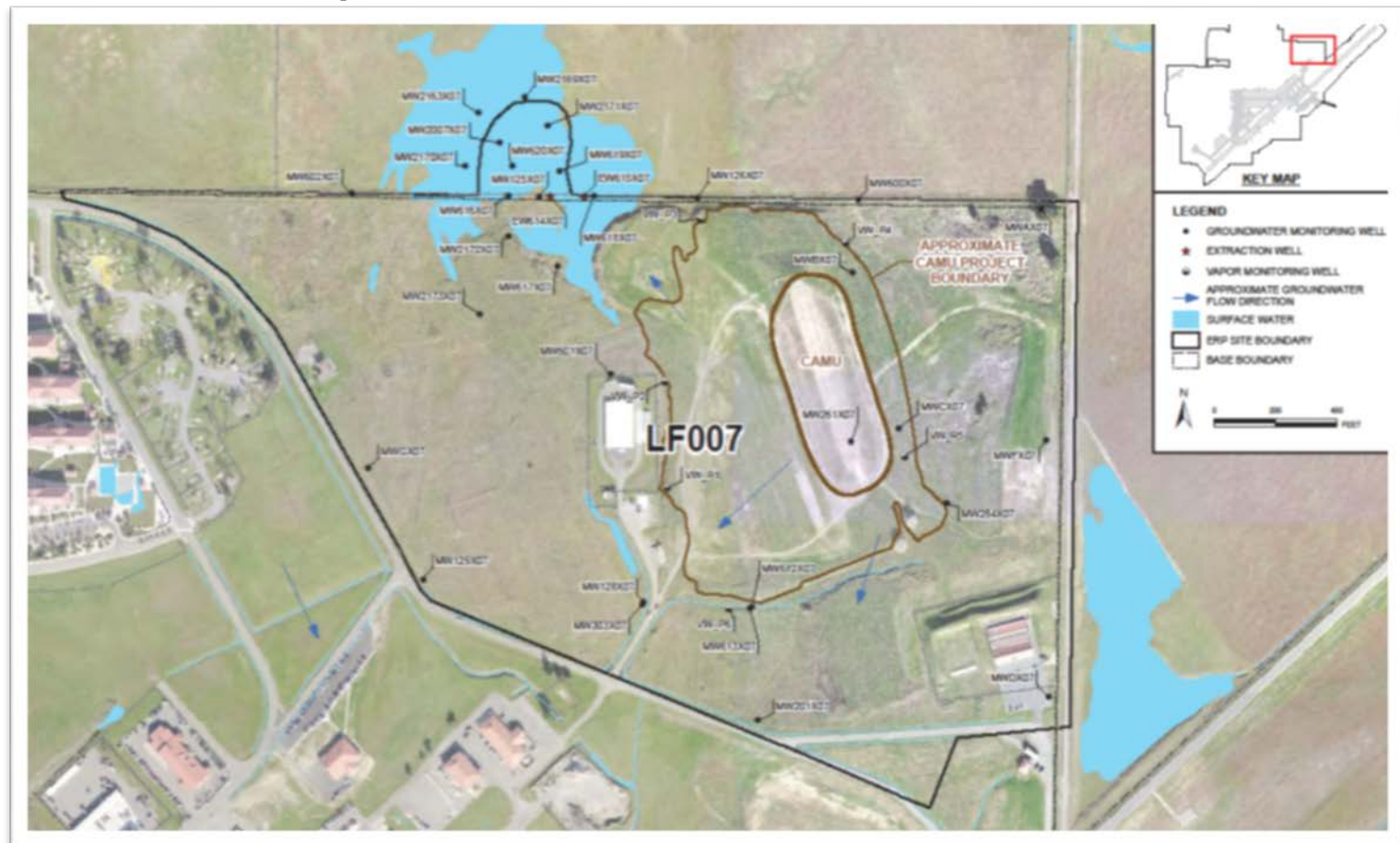
2016 Travis AFB Corrective Action Management Unit (CAMU) Inspection, Monitoring, and Maintenance (IM&M) Summary

July 2017



2016 Annual CAMU IM&M

- The CAMU is located in the eastern portion of Site LF007 (former Landfill 2) which in turn is located in the northeast portion of Travis AFB.



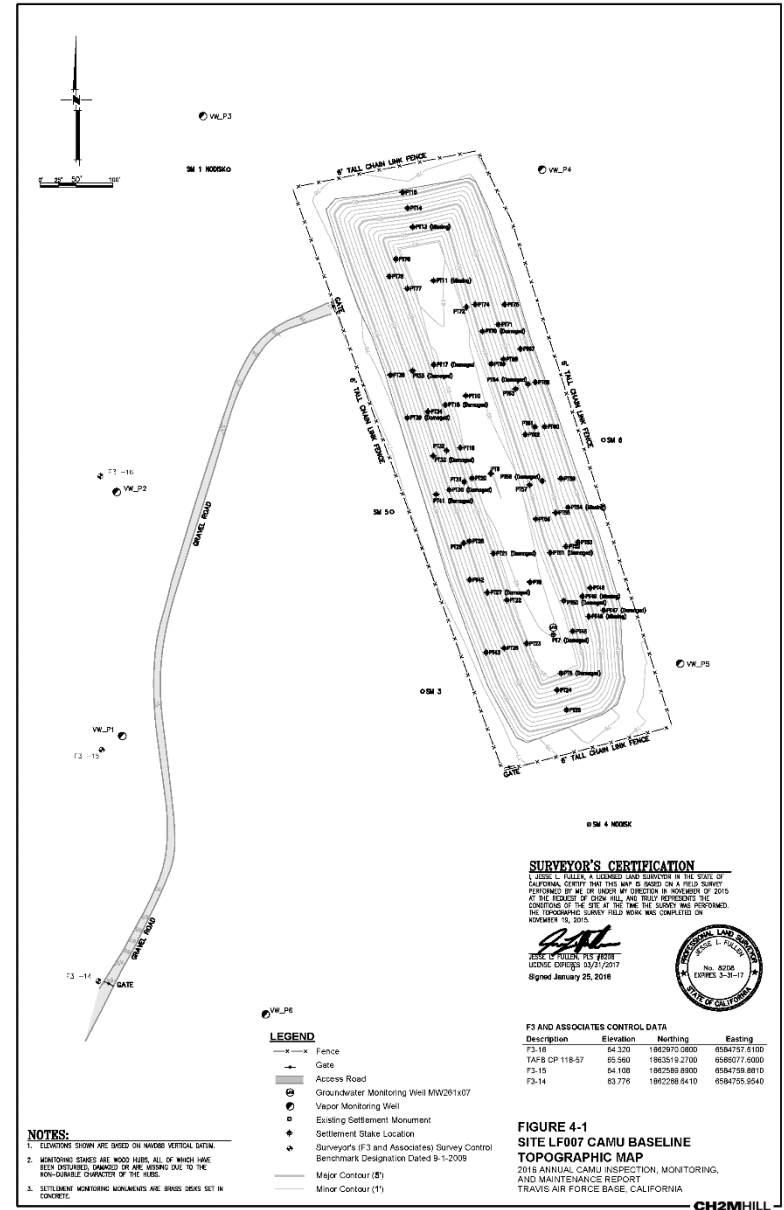
2016 Annual CAMU IM&M

- The CAMU landfill is a closed site, with a final cover system in place, and in the postclosure care period.
- IM&M activities at the CAMU have been ongoing since the final cover system was completed in 2008.
- CH2M took responsibility for IM&M in 2014 as part of the postclosure care program.
- IM&M activities are conducted in accordance with the Post-Construction Maintenance Plan (PCMP) and include landfill gas monitoring, settlement monitoring, CAMU subgrade and ET cover inspections, and site security inspections.
- Groundwater monitoring at the CAMU is conducted as a component of the Travis AFB Groundwater Remediation Implementation Program (GRIP).

2016 Annual CAMU IM&M

Settlement Monitoring

- Settlement monitoring of the CAMU transitioned from an annual point-by-point to a five (5)-year iso-settlement survey in 2015.
- The 2015 baseline topographic survey included the 70 wooden settlement stakes and five (5) settlement monuments (SM-1, SM-3, SM-4, SM-5, and SM-6) as survey points.
- The next topographic survey and iso-settlement analysis of the CAMU will occur in 2020. Consequently, no settlement monitoring activities other than visual observations during each monthly inspection occurred in 2016.
- No visual evidence of differential settlement including erosion, slumping, or water ponding were observed on the CAMU subgrade or ET cover in 2016.



2016 Annual CAMU IM&M

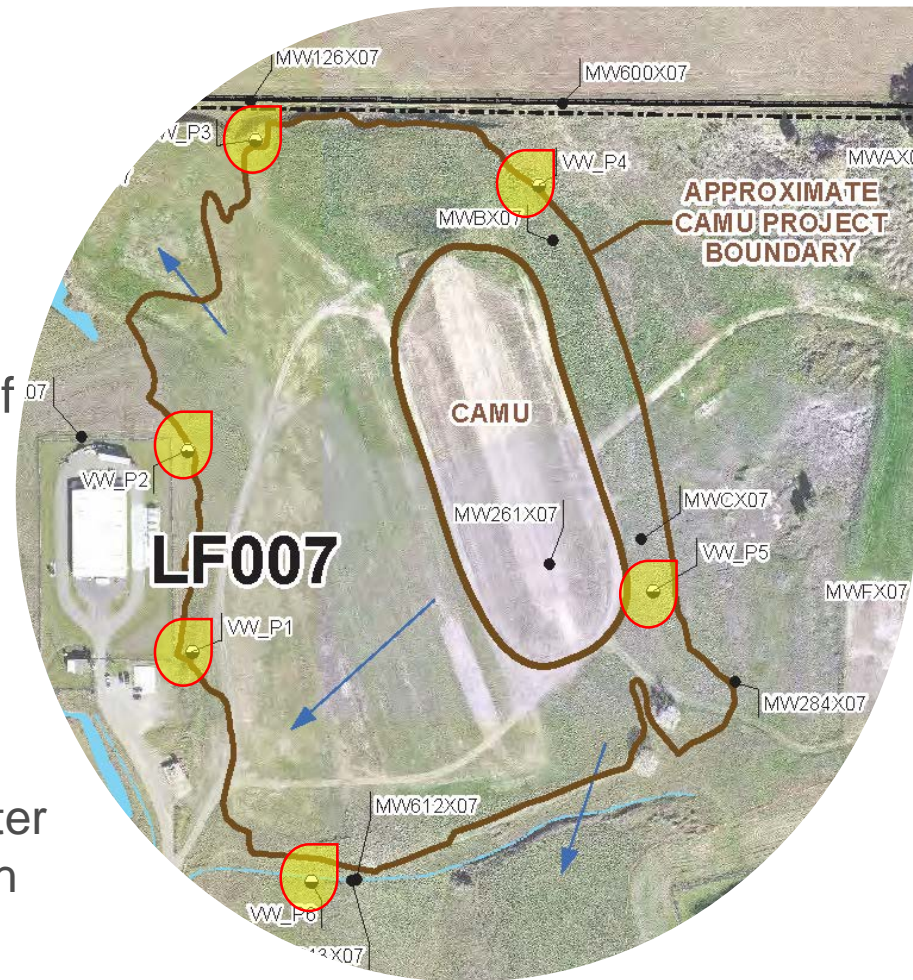
CAMU Subgrade and Evapotranspiration Cover Inspection

- Monthly inspections to evaluate the integrity and effectiveness of the CAMU subgrade and ET cover were performed in 2016.
- Inspection included visual evaluation for vegetation stress, soil erosion, cracks, ponded water, slope failure, settlement, subsidence and site security.
- No evidence of erosion, slope failure, settlement, subsidence, or ponded water was observed; site security was maintained, and there were no security issues during 2016.

2016 Annual CAMU IM&M

Landfill Gas Monitoring

- Quarterly landfill gas monitoring was required for the first two (2) years following completion of construction of the CAMU (completed in 2008).
- Conducted on a quarterly basis at perimeter wells VW-P1 through VW-P6 since 2008.
- As stated in the PCMP, the compliance concentration for methane in the perimeter wells is 5 percent by volume of air, which corresponds to an LEL of 100 percent.
-
- In 2016, methane levels ranged from 0.018 to 0.464 percent, with the highest level observed during March at VW-P3.
- No evidence of landfill gas migration was observed in 2016.



Conclusions

- The CAMU subgrade and ET cover are intact and continue to function as designed with no visual settlement or subsidence observed.
 - ❖ To ensure that the CAMU ET cover continues to function as intended in the PCMP, monthly visual site inspections will continue to be performed in 2017. No settlement monitoring activities other than visual during each monthly inspection will occur until the next topographic survey is performed in 2020. At that time, the 2015 baseline topographic map will be compared with the topographic map generated to perform iso-settlement analyses of the CAMU ET cover.

Conclusions - continued

- No issues with landfill gas migration, particularly methane, were observed. For the last 9 years, methane concentrations have been well below the five percent compliance limit, with maximum concentrations (1 percent) detected at VW-P3 in March 2015.
- ❖ Given the historically low methane concentrations observed during the last 9 years, a letter requesting a reduction in landfill gas monitoring from quarterly to annually will be submitted to the regulatory agencies in the third quarter of 2017. The revised landfill gas monitoring schedule will coincide with the time of year when methane production would most likely be highest (at the conclusion of the rainy season, typically in March). Landfill gas monitoring at the CAMU will continue to be conducted quarterly in 2017.

Questions?

TRIAD Presentation

RPM Meeting

Travis AFB

July 19, 2017

Agenda

- SD031 Remedial Investigation: Thallium & Hexavalent Chrome
- SD031 Remedial Investigation: Soil Data Collected to Date
- Construction/Injections/Drilling Status
 - Oil-water Separators
 - EVO Injections
 - DP039 Down-gradient Monitoring Well Installation
 - TS060 Excavation

SD031 Remedial Investigation: Thallium & Hexavalent Chrome

- Thallium
 - Collected soil samples from 05/16 to 09/16, and analyzed using EPA Method SW6010.
 - Detected Tl in the range of 0.57 J mg/kg to 9.9 J mg/kg: Suspected interference from high levels of iron and aluminum.
 - Reanalyzed 3 soil samples in 03/17. Collected 19 new soil samples in 05/17 from sample locations with previously high Tl concentrations and analyzed them using EPA Method SW6020.
 - Without interferences from other metals, the Tl concentrations ranged from 0.087 mg/kg and 0.17 mg/kg (ESL is 0.78 mg/kg).

SD031 Remedial Investigation: Thallium & Hexavalent Chrome

- Hexavalent Chrome
 - Collected soil samples from 05/16 to 09/16, and analyzed using EPA Method SW7196A.
 - Detected hexavalent chromium in the range of 0.12 J mg/kg to 1.5 mg/kg: Suspected interferences because there is no known source, and hexavalent chromium salts are not stable in soil.
 - Collected 18 new soil samples in 05/17 from sample locations that previously had high hexavalent chromium concentrations, and analyzed using Method BAL4300
 - Without the interference from other metals, the hexavalent chromium concentrations ranged from 0.019 J mg/kg and 0.507 mg/kg.
 - All but two of the soil samples were below the ESL of 0.30 mg/kg.
 - The two exceedances were 0.357 mg/kg and 0.507 mg/kg.

SD031 Remedial Investigation: Data collected to date

- Compounds in soil exceeding either ESLs or RSLs (*ESL, RSL*).
 - Dioxins and Furans (2,3,7,8-TCDD equivalent) – range is 0.06 to 227.8 ng/kg: *(4.9 ng/kg, 4.8 ng/kg)*
 - TPH-G – range is ND to 1,800 mg/kg: *(100 mg/kg, NA)*
 - TPH-D – range is ND to 2,800 mg/kg: *(230 mg/kg, NA)*
 - Acetone – range is ND to 2,000 µg/kg: *(500 µg/kg, 61,000 µg/kg)*
 - Benzene – range is ND to 1,400 µg/kg: *(44 µg/kg, 1,200 µg/kg)*
 - Ethylbenzene – range is ND to 2,400 µg/kg: *(1,400 µg/kg, 5,800 µg/kg)*
 - TCE – range is ND to 690 µg/kg: *(460 µg/kg, 940 µg/kg)*
 - Total Xylenes – range is ND to 27,000 µg/kg: *(2,300 µg/kg, 580,000 µg/kg)*
 - Naphthalene – range is ND to 4,700 µg/kg: *(33 µg/kg, 3,800 µg/kg)*
 - 2-Methylnaphthalene – range is ND to 26,000 µg/kg: *(250 µg/kg, 240,000 µg/kg)*
 - Benzo(a)anthracene – range is ND to 620 µg/kg: *(160 µg/kg, 1,100 µg/kg)*

SD031 Remedial Investigation:

Data collected to date

- Benzo(b)fluoranthene – range is ND to 890 $\mu\text{g/kg}$: *(160 $\mu\text{g/kg}$, 1,100 $\mu\text{g/kg}$)*
- Benzo(a)pyrene – range is ND to 620 $\mu\text{g/kg}$: *(16 $\mu\text{g/kg}$, 110 $\mu\text{g/kg}$)*
- Dibenzo(a,h)anthracene – range is ND to 190 $\mu\text{g/kg}$: *(16 $\mu\text{g/kg}$, 110 $\mu\text{g/kg}$)*
- Indeno(1,2,3-cd)pyrene – range is ND to 340 $\mu\text{g/kg}$: *(160 $\mu\text{g/kg}$, 1,100 $\mu\text{g/kg}$)*
- 1-Methylnaphthalene – range is ND to 19,000 $\mu\text{g/kg}$: *(NA, 18,000 $\mu\text{g/kg}$)*
- Phenol – range is ND to 910 $\mu\text{g/kg}$: *(76 $\mu\text{g/kg}$, 19M $\mu\text{g/kg}$)*
- Compounds in soil vapor exceeding the EPA Vapor Intrusion Screening Level (VISL)
 - Benzene – range is 3.7 to 290 $\mu\text{g/m}^3$: *(12 $\mu\text{g/m}^3$)*
 - Ethylbenzene – range is 6.7 to 4,100 $\mu\text{g/m}^3$: *(37 $\mu\text{g/m}^3$)*
 - Vinyl Chloride – range is ND to 18 J $\mu\text{g/m}^3$: *(5.6 $\mu\text{g/m}^3$)*
 - Naphthalene – range is ND to 12 $\mu\text{g/m}^3$: *(2.8 $\mu\text{g/m}^3$)*
 - Total Xylenes – range is 15 to 17,900 $\mu\text{g/m}^3$: *(3,500 $\mu\text{g/m}^3$)*

Construction/Injections/Drilling Status

- Oil Water Separators

- **OW050** soil investigation: Sampled around and beneath the former location of the OWS. Once the OWS was removed the excavation was backfilled with pea gravel. In native soil located immediately adjacent to or beneath the former location of the OWS to a depth of 6.5 feet bgs there was no staining or contamination present. We will close this OWS, and investigate the surrounding contamination under a new project.
- **OW055** Removed and replaced the sidewalk that overlies the former OWS. Construction is complete.
- **OW056** removal. Removed the OWS, and also removed contaminated soil from beneath it. Backfilled and repaved the excavation area. Construction is complete.

Construction/Injections/Drilling Status

- EVO Injections

- FT004: Injection is in progress, and we are about 30% injected.
- SS015: Injection is in progress, and we are about 20% injected.
- SD036: Injection not started yet.
- SD031: Injection not started yet.

Construction/Injections/Drilling Status

- DP039 Installation of down-gradient monitoring wells:
 - Completed installation of wells MW2674Ax39, MW2675x39, MW2676x39, and MW2677x39.
 - Baseline data from those wells show groundwater TCE detections of:
 - MW2674Ax39 – 0.37 J ug/L
 - MW2675x39 – 1.2 ug/L
 - MW2676x39 - <0.4 ug/L
 - MW2677x39 – 82 ug/L
 - Install step-out wells:
 - Installation of well MW2760x39 is in progress (cross-gradient from MW2677x39)
 - Will install MW2674Bx39 to ~90 ft bgs (vertically down-gradient from MW2674Ax39)
 - Will install MW2759x39 (down-gradient from MW2675x39)
- TS060
 - Started field work in late June, and the excavation started on 05 July.
 - To date, the excavation work is all on the PAH side, and is about 40% complete.

Map of DP039 – Down-gradient Area



Travis AFB Restoration Program

Program Update

RPM Meeting

July 19, 2017

Completed Documents (1)

- Vapor Intrusion Assessment Update Technical Memorandum
- 2012 CAMU Annual Report
- Old Skeet Range Action Memorandum
- 3rd Five-Year Review
- 2012 Annual Groundwater Remediation Implementation Status Report (GRISR)
- Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan
- Pre-Design Site Characterization of SS029 Report
- Old Skeet Range Removal Action Work Plan
- 2013 CAMU Inspection Annual Report
- Groundwater Record of Decision (ROD)
- CG508 POCO Work Plan
- 2013 Annual GRISR
- FT004 Technology Demonstration Work Plan
- Kinder Morgan LF044 Land Use Control Report
- SD031 Technology Demonstration Work Plan
- TA500 Data Gap Investigation Work Plan
- ST018 POCO Work Plan Addendum
- SD037 GW RD/RA Work Plan
- Travis AFB UFP-QAPP
- DP039 Lead Excavation Technical Memo

Completed Documents (2)

- Proposed Plan for ROD Amendment to WABOU Soil ROD
- Proposed Plan for ROD Amendment to NEWIOU Soil, Sediment, & Surface Water ROD
- SD034 Data Gap Investigation Work Plan
- POCO Investigation Work Plan for Oil-Water Separators
- ST032 POCO Soil Excavation Work Plan
- SD036 GW RD/RA Work Plan
- SS016 GW RD/RA Work Plan
- SS015 GW RD/RA Work Plan
- FT005 Technology Demonstration Work Plan
- 2014 Annual CAMU Monitoring Report
- Old Skeet Range PAH Delineation Report
- ST028 POCO Work Plan
- SS014 POCO TD Work Plan
- CG508 Site Investigation/Site Closure Request Report
- 2014 Annual CAMU Monitoring Report
- DP039 GW RD/RA Work Plan
- SD031 TDCCR
- ST018 POCO CCR
- Site SS030 Groundwater RA CCR
- Sites SD036 and SD037 Groundwater RACCR
- Site SS016 Groundwater RACCR
- Site SS015 Groundwater RACCR
- 2014 Annual GRISR
- Site CG508 Well Decommissioning Work Plan

Completed Documents (3)

- Data Gap Investigation TM for Soil Sites SD033, SD043, & SS046
- Site FT004 Technology Demonstration Construction Completion Report
- Site SD031 Soil Remedial Investigation Work Plan
- Corrective Action Plan for DERA-Funded Oil Water Separators
- Site ST032 POCO Completion Report
- Site ST028 POCO Completion Report
- 2015 Annual CAMU Monitoring Report
- Site SD031 Remedial Investigation Work Plan
- Site SD034 Technology Demonstration Work Plan
- Site SS016 Soil Data Gaps Investigation Work Plan
- Multi-Site Bioaugmentation Technology Demonstration Work Plan
- Sites ST028 and ST032 POCO Well Decommissioning Work Plan
- Site TS060 Action Memorandum
- 2015 Annual GRISR
- FT005 Technology Demonstration Construction Completion Report
- Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum
- Site DP039 Remedial Action Construction Completion Report
- ST028 POCO Well Decommissioning/Site Closeout Technical Memorandum
- Site TS060 Removal Action Work Plan

Completed Documents (4)

- Multisite Technology Demonstration
Construction Completion Report
- SS014 POCO Technology
Demonstration Construction
Completion Report
- Site LF044 Investigation Work Plan

Completed Field Work (1)

- Replace battery banks at ST018 Groundwater Treatment Plant
- Annual Groundwater Remediation Implementation Program (GRIP) Sampling event
- Well Decommissioning (9 Wells)
- Electrical repairs to FT005 extraction system (well EW01x05)
- Electrical repairs to Site SS029 extraction system
- Site ST018 carbon vessels upgrade
- 2014 GRIP Semiannual Sampling Event
- Pump repairs to Site SS016 well (EW610x16)
- Subsite LF007C optimization upgrades
- 2014 Annual GRIP Sampling Event
- Biological Resource Assessment
- Site CG508 Site Investigation
- Old Skeet Range Characterization Sampling
- 4Q Semiannual GRIP Sampling Event
- SD031 Technology Demonstration Well Installation
- SD037 Well Installation
- SD031 Trench/Conveyance/Power Installation
- SD031 EVO Injection
- ST018 Well Installation
- SS015 Well Installation
- SS016 Well Installation
- Well Development (SD036, SD037)
- ST018 Trench/Conveyance/Power Installation
- SD036 EVO Injection
- Well Development (SS015, SS016)
- Baseline Sampling (SS015, SS016)
- SS014 Data Gap Investigation
- SS016 EVO Injection
- TA500 Data Gaps Investigation

Completed Field Work (2)

- 2015 Annual GRIP Sampling
- SD037 EVO Injection
- SD034 Data Gaps Investigation
- SS015 EVO Injection
- FT005 Injection Well Installation
- OWS 47, 48, 49 Site Investigations
- SS030 Trench/Conveyance/Power Installation
- FT005 Trench Installation
- FT005 Well Development
- FT004 Well Installation, Well Development, Baseline Sampling
- FT005 Baseline Sampling
- DP039 Well Installation, Well Development, Baseline Sampling
- FT004 EVO Injection
- FT004 Trench/Conveyance/Power Installation
- DP039 Infiltration Trench Installation
- TA500 Groundwater Sampling
- FT005 EVO Injection
- 2016 Q2 GRIP Sampling
- Data Gap Inv. for Soil Sites (SD043, SS046)
- SD031 Remedial Investigation Step-out Sampling (2nd round)
- DP039 EVO Injection
- CG508 Well Decommissioning
- SD033 Soil Sampling
- Multi-site Bioaugmentation Well Installation
- SD034 Technology Demonstration Well Installation
- SS014 Bioreactor Installation
- ST028 & ST032 Well Decommissioning

Completed Field Work (3)

- SS016 Soil Data Gaps Investigation
- SD031 Remedial Investigation Soil Sampling (3rd round)
- Oil Water Separators Step-out Drilling
- OW055 Close-in-place
- Q4 2016 GRIP Sampling
- OW040 Soil Excavation/Surface Restoration
- OW057 Soil Excavation/Surface Restoration
- Multi-site Bioaugmentation & EVO Injection
- SD034 Technology Demonstration Bioreactor Installation
- OW050 Soil Sampling at Former Location of OWS
- OW055 Sidewalk Repairs
- SD031 Finish Soil Delineation (NE portion of site)
- Q2 2017 GRIP Sampling Event
- SS015 Optimization: Injection Well Installation
- DP039 Down-gradient Monitoring Well Installation (1st round)
- SD036 Optimization: Injection Well Installation
- SD031 Optimization: Injection Well Installation
- ***OW056 Site Excavation/Closure***

Documents In-Progress

CERCLA

- Community Relations Plan
- SD034 Technology Demonstration Construction Completion Report
- 2016 Annual GRISR
- ***2016 Annual CAMU Monitoring Report***

POCO

- POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054
- Site FT004 POCO Soil Data Gap Investigation Work Plan

Field Work In-Progress

CERCLA

- FT004 EVO Optimization
- TS060 Removal Action
- SS015 EVO Optimization
- ***DP039 Install downgradient monitoring wells (2nd round)***
- ***Well Development***

POCO

- ***None***

Documents Planned

CERCLA

- Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, SS046 Aug
- ***Amendment to the Soil ROD for WABOU sites DP039, SD043, and SS046*** Oct
- Site SS016 Data Gap Investigation Technical Memorandum TBD
- Work Plan for Fourth Five-year Review TBD

POCO

- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, **OW050**, OW052, OW055, **OW056**, and OW057 TBD
- ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum TBD

Field Work Planned

CERCLA

- SD036 EVO Optimization Aug
- SD034 Install bollards around SBGR Aug
- DP039 Repair SBGR distribution headers Aug
- SD031 EVO Optimization Sep
- LF044 Sediment Sampling 2017

POCO

- FT004 POCO Soil Data Gaps Investigation Sep

Note: Contact Lonnie Duke if you
would like to observe planned field
work events

Technology Demonstration Projects (1)

- SS014: Recycled Drywall SBGR
 - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater
 - Installation was completed November 2016
 - First quarter performance results
 - TPH-G: 99% reduction in source area (1,900 to 14 J $\mu\text{g/L}$), 18% for remaining 7 site wells
 - TPH-D: 98% reduction in source area (5,500 to 130 J $\mu\text{g/L}$), 33% for remaining 7 site wells
 - Benzene: 98% reduction (22 to <0.4 $\mu\text{g/L}$), 49% for remaining 7 site wells
- Multisite Bioaugmentation: EVO and KB-1 Plus
 - Evaluate if addition of bioaugmentation substrate to an EVO injection will increase the rate of CVOC degradation
 - Injections were completed (Nov 2016)
 - Limited TOC dispersal at SD036, so install additional injection wells and reinject with nanoEVO in 2017
 - Too early to evaluate performance data

Technology Demonstration Projects (2)

- SD034: Washboard SBGR
 - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater
 - Installation was completed November 2016
 - Installed six (6) SBGR trenches.
 - Too early to evaluate performance data
- FT005: Distribution of EVO and KB-1 Plus
 - Evaluate total organic carbon (TOC) dispersion distances and rates for optimizing the remediation of 1,2-dichloroethane (DCA) in groundwater
 - Installation completed May 2016
 - Slightly elevated TOC and reduced COC concentrations in the north, but too early to evaluate performance data
 - May evaluate optimization of GETs in southern portion of site

Technology Demonstration Projects (3)

- FT004: Distribution of EVO via SBGR and/or Groundwater Extraction
 - Determine effectiveness of TOC distribution through two different enhanced reductive dechlorination (ERD) approaches: (1) groundwater TOC recirculation using a combination EVO injection, infiltration SBGR trenches, and groundwater extraction; and (2) EVO injection with groundwater extraction
 - Installation completed April 2016
 - Limited TOC dispersal, additional EVO injection underway with nanoEVO to determine if this can enhance TOC dispersal
 - COC concentrations have declined
 - ~50% total molar reduction plume-wide through first year
 - Max monitoring well TCE concentration reduced from 560 to 140 µg/L

Technology Demonstration Projects (4)

- SD031: EVO distribution via Gravel Chimneys
 - Determine if EVO injection and recirculation of groundwater through gravel chimneys can effectively distribute TOC horizontally in the subsurface to support ERD of 1,1-dichloroethene (DCE)
 - Installation completed in April 2015
 - Early indications:
 - Reducing conditions have initiated as expected throughout the TD area and are supporting anaerobic degradation
 - TOC concentrations are increasing at several wells
 - Recirculation through chimneys has been successful relative to our design assumptions
 - 1,1-DCE (primary COC) concentrations have reduced by 93% (sum of key wells within TD area, excluding 2 wells to SW that increased)
 - Total Molar concentration (sum of CVOCs) has reduced by 84% (sum of key wells within TD area, excluding 2 wells to SW that increased)
 - Four (4) new EVO wells installed to SW to enhance TOC in problem areas (plume being pulled back towards extraction well causing increasing concentrations in this area)

Completed Documents (Historical1)

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation Work Plan
- ST027B Site Characterization Work Plan
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation Work Plan
- Phytostabilization Demonstration Technical Memo
- Model QAPP
- LF008 Rebound Test Technical Memo
- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- GSAP 2008/2009 Annual Report
- FT005 Data Gap Work Plan
- First, Second, & Third Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- DP039 RPO Work Plan
- SD036/SD037 RPO Work Plan
- ST027B Site Characterization Report
- 2009 GWTP RPO Annual Report
- Natural Attenuation Assessment Report (NAAR)
- Union Creek Sites SD001 & SD033 Remedial Action Report
- CAMU 2008-2009 Monitoring Annual Report

Completed Documents (Historical 2)

- Phytostabilization Study Report
- 2009/2010 Annual GSAP Report
- SS015 Remedy Optimization Field Implementation Plan
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report
- SD036 Remedy Optimization Field Implementation Plan
- 2010 Annual CAMU Inspection Report
- Site ST018 POCO Baseline Implementation Report
- FT005 Data Gaps Investigation Report
- Comprehensive Site Evaluation Phase II Report
- 2010 Groundwater RPO Annual Report
- Focused Feasibility Study (FFS)
- Site ST027-Area B Human Health Risk Assessment
- Site ST027-Area B Ecological Risk Assessment
- Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- 2010/2011 Annual GSAP Report
- Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039)
- 2011 CAMU Annual Report
- Technical and Economic Feasibility Analysis (TEFA)
- Work Plan for RPO of Sites SS016 and SS029
- Site LF007C Data Gaps Investigation Technical Memorandum
- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Groundwater Proposed Plan (PP)
- FT005 Remedial Action Completion Report
- 2012 GSAP Technical Memorandum¹⁸

Completed Field Work (Historical1)

- ST027B Gore Sorber Survey–Phase 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event - 2009
- SS030 Site Characterization–Phase 1
- ST027 Site Characterization -Phase 3
- ST014 Monitor Well Install - Subsite 3
- SD001/SD033 Sediment RA
- SS016 Site Characterization (OSA source area)
- ST018 Site Characterization
- SS030 Site Characterization (Off-base VOC Plume)
- DP039 Site Characterization (for Biobarrier Placement)
- SS014 & ST032 Q1 2010 MNA Sampling (2nd of 4 quarterly events)
- SD036 Additional Site Characterization (north & east)
- Therm/Ox System Removal
- SS016 Monitoring Well Installation
- SD037 EVO Injection Well Installation
- DP039 Monitoring Well & Injection Well Installation
- DP039 EVO Injection
- SD037 Monitoring Well Installation
- GSAP 2010 Annual Sampling Event
- SD037 EVO Injection
- SS015 Site Characterization
- South Plant GAC Change-out
- FT005 Data Gap Investigation
- SS016 Position Survey of EW03
- SS016 Bioreactor Installation
- SS016 Bioreactor Baseline Sampling
- DP039 Biobarrier Quarterly Performance Sampling

Completed Field Work (Historical 2)

- DP039 Bioreactor Quarterly Performance Sampling
- SD037 EVO Quarterly Performance Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 Bioreactor Startup
- SD036 Injection Wells Installation
- SS015 Injection Wells Installation
- ST018 GETS Installation
- SD036 EVO Injection
- 2010 Semiannual GSAP
- SS015 EVO Injection
- Quarterly RPO Performance Monitoring (Feb 2011)
- ST018 GETS Startup
- Quarterly RPO Performance Monitoring (May 2011)
- 2011 Annual GSAP Sampling
- SS029 GET Shutdown Test (System Optimization analysis)
- Quarterly RPO Performance Monitoring (Aug 2011)
- Quarterly RPO Performance Monitoring (Nov 2011)
- 2011 Semiannual GSAP Sampling
- LF007C Site Characterization (Wetlands)
- FT005 Soil Remedial Action
- Performance Monitoring SS015 (4th Quarterly event)
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes (Feb 21-22)
- 2012 Annual GSAP Sampling
- CAMU Lysimeter Removal
- LF007C GET System Optimization
- SS029/SS016 System Optimization Analysis
- GSAP Semiannual Sampling Event
- Replace electrical wiring for well field at Site SS030